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1. Introduction and Executive Summary

What is the Alexandria Transit Vision?

The Alexandria Transit Vision is taking a fresh look at transit service in the city. Through this visioning process, the City is taking an unconstrained look at how the bus network in the city can best serve existing needs, as well as new residents, businesses, and visitors who will come to Alexandria in the next 10 to 20 years.

This process is being led by the City of Alexandria and the City transit agency, DASH, in close coordination with WMATA, Arlington County, Fairfax County, and the Northern Virginia Transportation Commission (NVTC). The City of Alexandria began this conversation in 2018 with the public, stakeholders, riders, and elected officials about whether to change the city's transit network, in what direction the system should be changed, and how to invest in the future of transit in Alexandria.

The goals of this process have been to:

» Assess the existing transit network and the geometry of today's city.

» Analyze existing travel patterns and consider changing trends and technologies in transportation.

» Engage the public, stakeholders, and elected officials in a conversation about the goals of transit in Alexandria.

» Develop recommendations for changing the transit network to best meet the needs and goals of today's city and the future of Alexandria.

In October 2018, the City published a Choices Report, held eleven public meetings or events, and invited feedback through an online survey about the transit goals in Alexandria. In February 2019, the City published a Concepts Report that showed different ideas for how a network for Alexandria could be designed based on different goals. The City and DASH held numerous public meetings and events, and invited feedback through an online survey to understand how Alexandrians wanted transit to serve their community.

This Draft Recommended Network Report is the third step in the Alexandria Transit Vision Plan where the feedback and policy direction from the first and second phases of input has led the study team to draft short and long-term recommended networks to guide the future of a new transit network for Alexandria.

How does the Draft Recommended Network perform?

For most people and most places in Alexandria, the Recommended Network dramatically improves transit access to jobs, people, and opportunities across the city. It does this by providing more frequent service along the busiest and densest corridors and by rearranging service in some areas to consolidate low frequent routes into higher frequency service. With these changes, the number of residents and jobs near frequent service would increase dramatically and the number of jobs that the average person could reach would increase substantially.

» The percent of Alexandria residents near frequent transit (a bus or train coming every 15 minutes or better) **would increase from 27% to 79%.**

» The percent of jobs in Alexandria near frequent transit (a bus or train coming every 15 minutes or better) **would increase from 40% to 75%.**

» For the average Alexandrian, the number of jobs accessible by transit within 45 minutes **would increase by 18%.**

What Goals Does Transit Serve?

Transit planning is not just a technical process. Transit plans reflects community values. Difficult choices need to be made in the course of a transit plan. Understanding which goals matter most in Alexandria was a key step in developing the Draft Recommended Network for Alexandria.

Possible goals for transit include:

» **Economic:** transit can give businesses access to more workers, and give workers access to more jobs. Transit can also help attract industries, new residents, or tourists. By maintaining access and mobility in the face of congestion, transit can also increase the economic potential of a city.

» **Environmental:** increased transit use can reduce air pollution and greenhouse gas emissions. Transit can also support more compact development and help conserve land.

» **Health:** transit can be a tool to support physical activity by walking. This is partly because most riders walk to their bus stop, but also because riders will tend to walk more in between their transit trips.

» **Personal Liberty:** By providing people the ability to reach more places than they otherwise would, a transit system can be a tool for personal liberty, empowering people to make choices and fulfill their individual goals.

» **Social:** transit can help meet the needs of people who are in various situations of disadvantage, such as low-income or disability, providing lifeline access to services and jobs.

Some of these purposes are served only when transit has high ridership. The environmental benefits of transit only arise from many people riding the bus rather than driving, taking a taxi, or otherwise getting a ride in a private vehicle. And subsidy per rider is lower when ridership is maximized. **We call these ridership goals.**

Other goals are served by the fact that transit is available in a given area. A bus stop in a neighborhood gives residents insurance against isolation, even if the service is infrequent, not very useful, and few people ride it each day. Or that same service helps fulfill political or social obligations, for example by getting service close to every taxpayer. **We call these coverage goals.**

Jobs Reachable within 45 Minutes
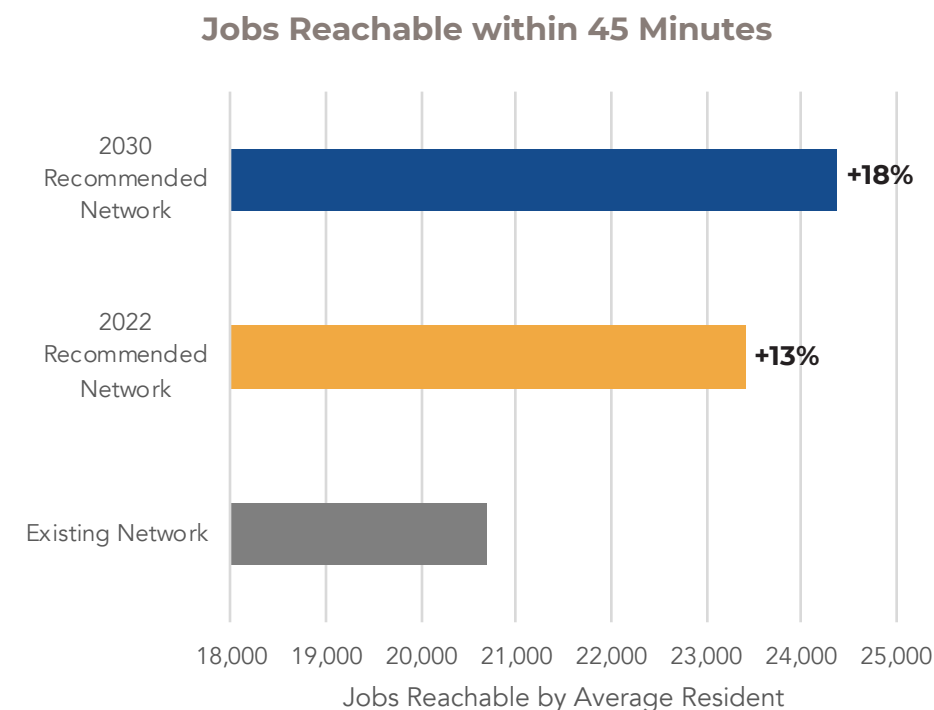
Figure 1: Summary of the change in access to jobs with the Draft Recommended Networks

The Transit Network as an Instrument of Freedom

High transit ridership results when transit is useful to large numbers of people. A helpful way to illustrate the usefulness of a network is to visualize where a person could go using public transit and walking, from a certain location, in a certain amount of time.

The map at right shows where someone can go by walking and transit using the existing network if they start out from TC Williams High School at noon on a weekday. From the selected point, the map shows where someone could be, on public transit combined with walking, in 15, 30, 45, or 60 minutes. The technical term for this illustration is isochrone. A more useful transit network is one in which these isochrones are larger, so that each person is likely to find the network useful for more trips.

What goes into the travel time reflected in this isochrone? Time spent walking to a bus or rail station. Time spent waiting for the bus or train, which is one-half of the frequency of the route. Time spent riding the bus or train (the faster the vehicle goes, the farther someone can get). And time spent walking to the final destination.

Frequency, speed and distance govern people's travel time on transit. While speed and distance are mostly out of the control of DASH or other bus operators, the frequency of different transit services is a decision made by DASH or Metrobus. Long waits for low frequency services can consume a great deal or all of someone's travel time budget, making for smaller isochrones.

The example here shows this problem clearly. TC Williams is served by multiple bus routes, which is why access is available in many directions. But most of the routes that serve it only come once every 30 minutes. On average, a person will have to wait 15 minutes for a bus, so a large part of a person's travel budget is taken up by wait time for any trip by transit from TC Williams.

We can think of these shapes as the walls around someone's life. A transit network can be liberating, giving people access to the opportunities of their city, the freedom to find work, go to school, worship, meet people, and do all of the other things that have drawn humans to cities for thousands of years. The transit network can be an instrument of freedom for current and future Alexandrians.

Frequency is Freedom

In transit conversations, there is always a great focus on where transit is provided, but sometimes not enough attention paid to when it is provided.

The "when" of transit service can be described as "frequency" or "headway" (how many minutes between each bus) and "span" (how many hours per day, and days per week, it runs).

Low frequencies and short spans are one of the main ways that transit fails to be useful, because it means service is simply not there when the customer needs to travel.

Increasing Usefulness Increases Ridership

Expanding freedom and opportunity is foundational for ridership growth. While other factors also affect ridership, this measure of freedom and opportunity isolates the transit network's role in attracting ridership. It reveals ways that a transit network can help more people get to more places sooner, so that they can do more things.

The biggest limits on how much access a transit network can offer are the frequency of service, the span of service throughout each day and week, and the connections between routes. Within any fixed budget, geographic coverage trades off against frequency and span. Even with more funding to add service, every city or transit agency must consider the balance of different goals that it wants to achieve with its transit service.

From T.C. Williams High School, where could I travel to on weekdays at 12 pm using the existing network?

Areas that can be accessed by the existing network within:
- 15 minutes
- 30 minutes
- 45 minutes
- 60 minutes

Data Source: DASH and WMATA GTFS 2018
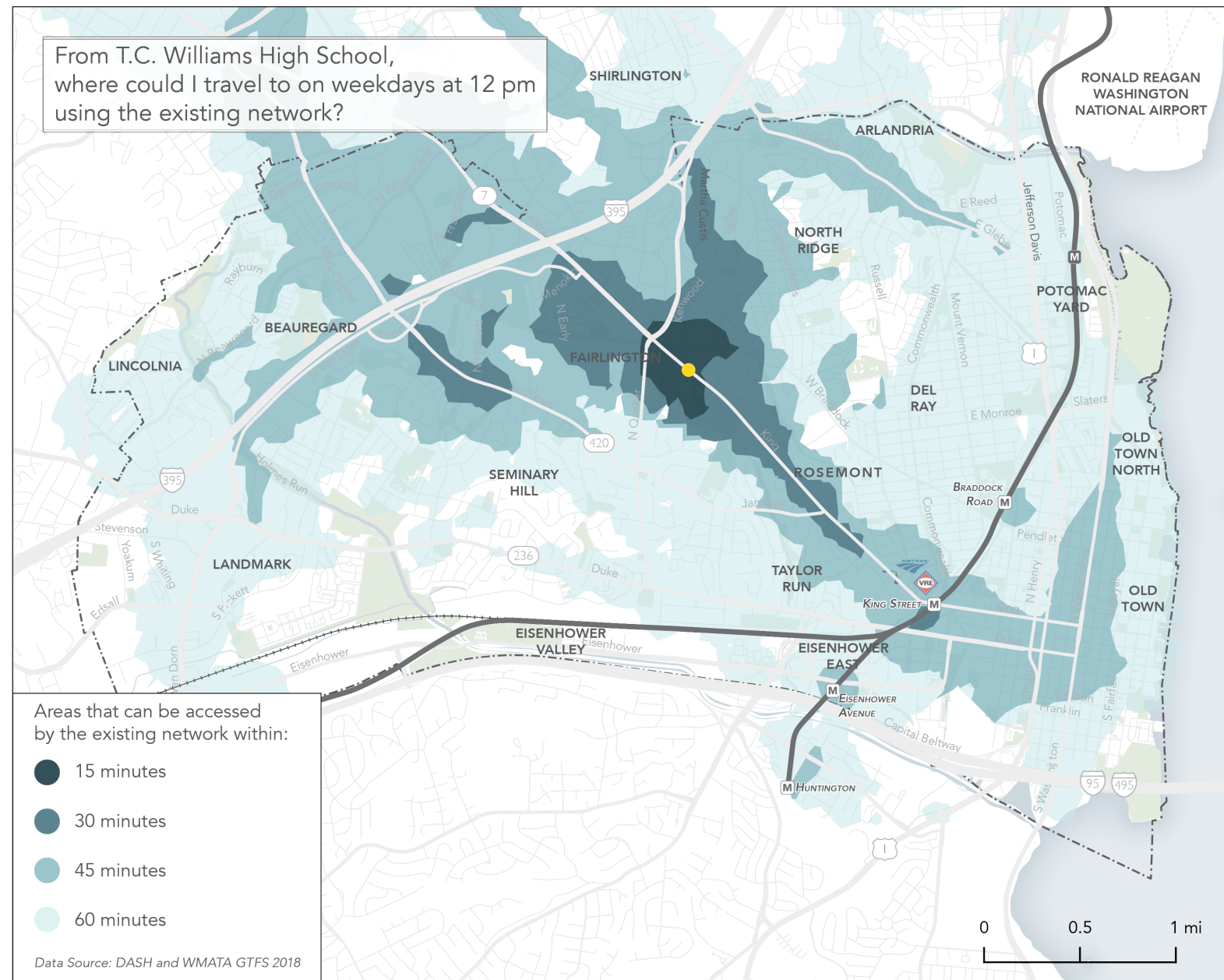
Figure 2: Using the Existing Network, a trip from TC Williams High School can only reach a small part of the city within 30 minutes, but most of the city is reachable within an hour.

Through this Vision Plan, the City of Alexandria, DASH, and the public have considered changes in the short and long-term that would increase access for large numbers of people.

Ridership and Coverage Goals Conflict

Ridership and coverage goals conflict. Within a fixed budget, if a city or transit agency wants to do more of one, it must do less of the other.

Consider the fictional city in Figure 3. The little dots indicate dwellings, commercial buildings and other land uses. The lines indicate roads. As in many neighborhoods, most activity is concentrated around a few roads.

A city pursuing only ridership would run all its service on the main streets, since many people are nearby, and buses can run direct routes. A high ridership network allocates frequent service to areas with favorable urban development patterns, forming a connected network, resulting in a network like the one at bottom-left.
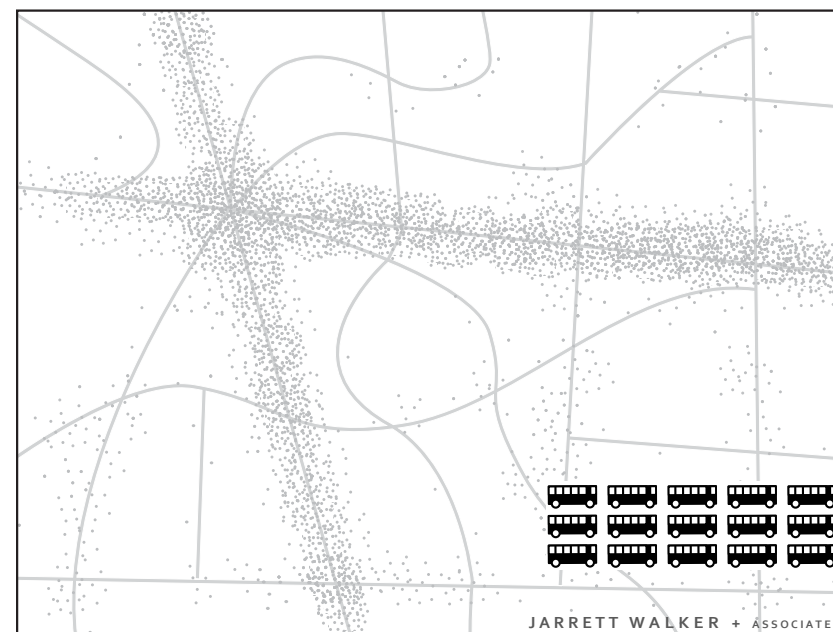
If the city were pursuing only coverage, it would spread out so that every street had some service, as in the network at bottom-right. All routes would then be infrequent, even on the main roads.

These two scenarios require the same number of buses and cost the same amount to operate, but deliver very different outcomes. To run buses at higher frequency on the main roads, neighborhood streets will receive less coverage, and vice versa.

The choice between maximizing ridership and maximizing coverage is not binary. All cities and transit agencies spend some portion of their budget pursuing each type of goal. Cities are often accused of failing to maximize ridership, as if that were their only goal. In fact, cities are often intentionally operating "coverage services" that are not expected to generate high ridership. Cities must balance the competing goals of high ridership and coverage. The balance they choose depends on the values of the city.

A particularly clear way for cities and transit agencies to set a policy balancing ridership and coverage goals is to decide what percentage of their service budget should be spent in pursuit of each. This is precisely the approach taken in the Alexandria Transit Vision process as the public, riders, stakeholders, and elected leaders considered the differing values and outcomes of these goals in the Concepts Report and the ATC Board provided a policy direction to the study team for how to balance these competing goals.

Imagine you are the transit planner for this fictional town.

The dots scattered around the map are people and jobs.

The 18 buses are the resources the town has to run transit.

Before you can plan transit routes, you must first decide: **What is the purpose of your transit system?**

Maximum Ridership
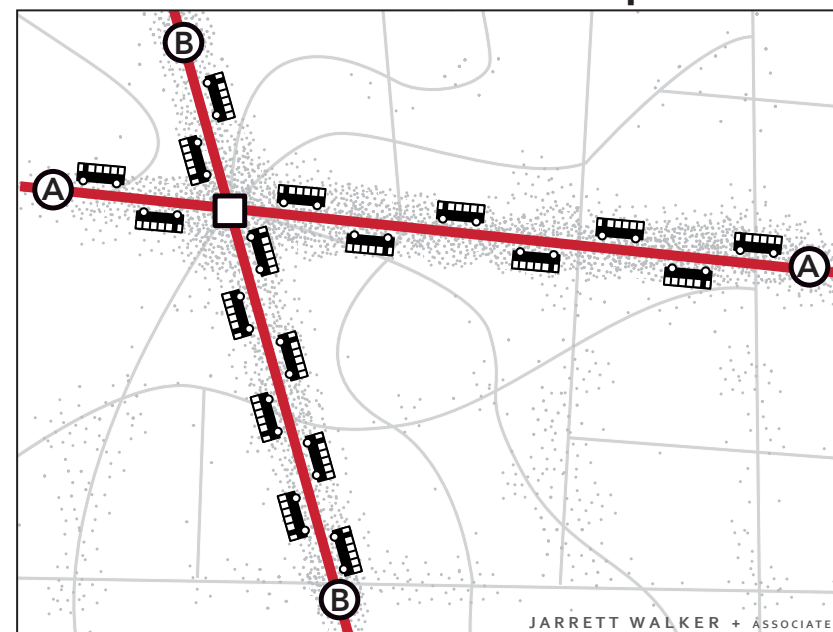
All 18 buses are focused on the busiest area. Waits for service are short but walks to service are longer for people in less populated areas. Frequency and ridership and high, but some places have no service.

Maximum Coverage
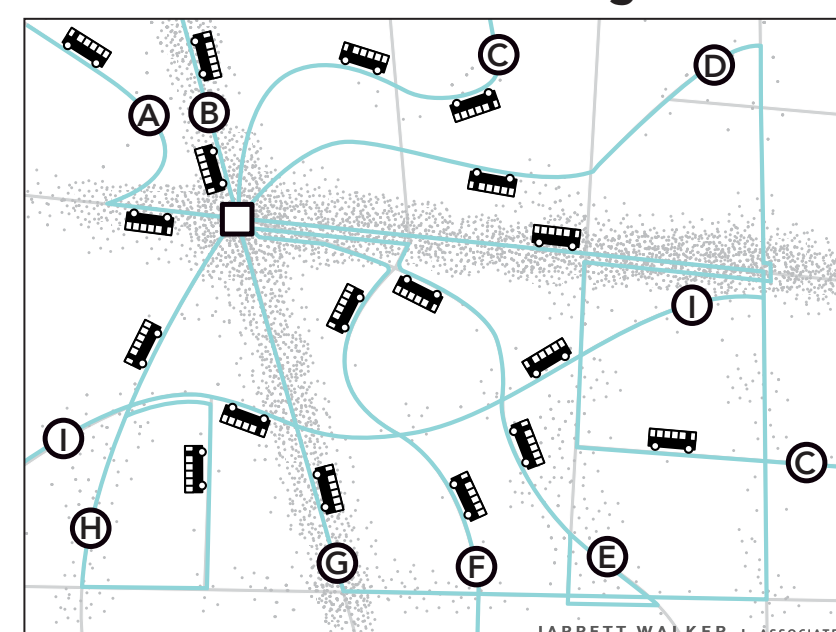
The 18 buses are spread around so that there is a route on every street. Everyone lives near a stop, but every route is infrequent, so waits for service are long. Only a few people can bear to wait so long, so ridership is low.

Figure 3: Ridership and coverage goals are in direct conflict within a fixed budget.

How Did We Get Here?

In the first round of engagement for the Alexandria Transit Vision, or "Choices" phase, the study team asked the public and community stakeholders about their values and priorities for transit, and how they might balance certain trade-offs related to transit service in Alexandria. These trade-offs are consistent with the findings presented in the Choices Report in October 2018.

In the first phase a public survey provided input on the key questions like:

» If people would prefer to walk longer and wait less at a bus stop or wait longer but not have to walk as far.

» If respondents preferred a transit system that prioritized coverage or ridership and frequency.

» If people preferred a faster overall trip, even if it meant transferring, or if they preferred a one-seat ride, even if the overall travel time was longer.

Responses showed that most people preferred a longer walk for a shorter wait and faster trip; most preferred a higher ridership network; and most preferred a faster trip, even if it meant they would have to transfer to a connecting route. For a full summary of the responses in the "Choices Phase" see the Concepts Report.

Building off these responses, the study team developed two network concepts to show the range of possible network designs and outcomes from prioritizing different goals. Both concepts assumed about 20% more service than today, but each concept had the same amount of service, so they showed different ways of allocating the same total resources.

The two concepts differed in the degree to which they emphasize ridership goals as opposed to coverage goals. These concepts represented a spectrum of possibilities and they were not intended to be an either/or proposition. By showing the public, stakeholders, and decision makers the range of possibilities, the City and DASH were asking: "Now that you see the outcomes of emphasizing one goal over another, how do you balance ridership and coverage goals? In other words, if you want better service, what is your definition of better?"

From February through June 2019, the City and DASH held a series of public engagement sessions including:

» A stakeholder workshop,

» Three in-person community meetings,

» Sixteen pop-up events across Alexandria,

» A meeting with DASH bus drivers,

» Community organization briefings, and

» Briefings and public hearings before the Alexandria Transportation Commission and DASH Board.

Throughout these outreach efforts a survey was available online and on paper, in English and Spanish.

Responses from the public indicated that they preferred both the Coverage and Ridership Concepts to the Existing Network and preferred the Ridership Concept over the Coverage Concept. The public survey and direct feedback and public hearings culminated in a decision by the Alexandria Transit Company (ATC) Board at their June 12, 2019 meeting where **the Board provided the following policy resolution directing the study team to design the Alexandria Transit Vision as follows**[1]:

» The 2030 ATV Network should be designed with the assumption that DASH and WMATA can provide 20% more service hours than today.

» The ATV network should be designed with approximately 85% of service hours dedicated to ridership-oriented goals.

» Approximately 15% of service hours should be allocated for coverage type services, with an emphasis on maintaining transit access for areas with significant numbers of seniors and individuals with limited mobility.

» In light of extensive public feedback, to the maximum extent possible, existing peak services should be retained in a similar form, particularly the AT3 and AT4.

» For the short-term (2022), the ATV should provide

» A scenario that assumes an 8% increase in service hours for DASH;

» A scenario that assumes 0% growth in service hours for DASH (exclusive of 395/95 Commuter Choice funding described on the next page); and

» Possible improvements between 0% and 8% growth scenarios.

Ridership Concept
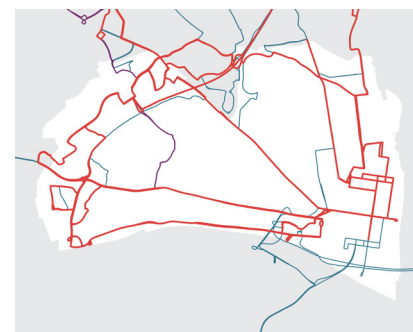
Coverage Concept

Where should the transit network be, on this spectrum?

Figure 4: The two concepts shown in the Concepts Report represented ends of the spectrum for public conversation around the redesign of the Alexandria transit network.

Who designed this network?

Using the policy direction from the ATC Board, this network was designed through collaboration among City of Alexandria planning and transportation staff, DASH staff, WMATA bus planning staff, and consulting transit experts from Kimley-Horn and Associates and Jarrett Walker + Associates. Planning staff from Arlington, Fairfax, and NVTC have also participated in various stages of the network design and development process.

This network represents some key choices about the future of transit in Alexandria. Those choices were made not by the technical experts, but by Alexandria stakeholders, residents, and leaders. The choices, and the many ways that people weighed in on them, are described in the next chapter.

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[1] Alexandria Transit Company Board of Directors Meeting, June 12, 2019. Summary of board action is available at www.dashbus.com/transitvision

Existing System

The map at right (Figure 5) shows Alexandria's existing bus network, with every route color-coded based on its frequency during midday on a weekday. This should be the point of comparison for understanding how the Draft Recommended Networks are different from today's system.

» The map at right reveals that at midday, most Alexandria routes offer 30-minute frequency. **For existing rush hour service, see Figure 8 on page 10.**

» The Existing Network devotes 50% of resources to service that one would expect to get high ridership relative to cost.

» The other 50% of resources is going to service that is not likely to get high ridership relative to cost, but is meeting other important goals, like covering low density areas with severe needs.

» This network provides frequent transit service to 27% of residents and 40% of jobs in Alexandria.

» This network provides some transit service (no matter the frequency) to 97% of residents and 90% of jobs.

» This network allows the average Alexandrian to reach 20,700 jobs within 45 minutes by walking and transit.

One key difference in this map, compared to previous versions in the Choices and Concepts Reports, is that it shows more frequent service on the AT1 as a result of 395/95 Commuter Choice funding. NVTC administers the I-395/95 Commuter Choice program in cooperation with the Commonwealth of Virginia and the Potomac and Rappahannock Transportation Commission (PRTC). The program funds multimodal improvements in the I-95/395 corridor that benefit I-395 Express Lanes toll payers and move more people through the corridor.

DASH and the City of Alexandria applied for enhanced bus service for AT1 and AT9 from the 395/95 Commuter Choice program. Based on project scores at the date of publication, funding awards are anticipated to support enhanced service on both routes. Therefore, this map reflects the expected midday frequency of service this fall. The rush hour map (Figure 14 on page 18) reflects the higher frequency expected on both the AT1 and AT9 as a result of this new funding.

Figure 5: Existing System, Midday Weekday Frequency

Alexandria Transit Vision
Existing Midday Network

Midday Frequency
- KST — 15 min or better
- 7AF — 16 - 25 min
- AT2 — 26 - 40 min
- AT7 — 41 - 60 min

- Ⓜ — Metrorail line + station
- MWY — Metroway
- AT1 — DASH bus route
- 7AF — WMATA bus route

Note: This map only shows routing that operate all-day. For peak-only routes, see Existing Peak Network map.

- To Pentagon Station
- Office/Mixed Use
- Residential Complex
- Retail Center
- Educational Institution

2030 Recommended Network

The 2030 Draft Recommended Network (Figure 61) assumes a 20% increase in service hours for DASH and WMATA bus service and continued funding from the I-395 Commuter Choice program for additional service in western Alexandria. These additional resources are primarily invested in increasing the frequency of all day service and expanding evening and weekend service.

» This map show the weekday midday bus network, which means the frequency of service and routes that are available most of the time, seven days a week. **For 2030 Recommended rush hour service, see Figure 9 on page 11.**

» The 2030 bus system would provide a high frequency network across most of the city.

» This network devotes 85% of resources to service that one would expect to get high ridership relative to cost.

» The other 15% of resources is going to service that is not likely to get high ridership relative to cost, but is meeting other important goals, like covering low density areas with severe needs.

» This network provides frequent transit service to 79% of residents and 75% of jobs in Alexandria on weekdays at midday. This is a significant increase from today, where only 27% of residents and 40% of jobs are near frequent transit.

» This network provides some transit service (no matter the frequency) to 95% of residents and 91% of jobs.

» This network allows the average Alexandrian to reach 24,400 jobs within 45 minutes by walking and transit—**18% more jobs than are reachable with the existing network**.

The average Alexandrian could reach **18% more jobs within 45 minutes** with this 2030 Recommended Network.

Figure 6: Draft Recommended Network by 2030, <u>Midday Weekday Frequency</u>

Any changes to routes outside of Alexandria will be coordinated with the appropriate jurisdiction and WMATA (where applicable).

Existing Arlington Transit (ART) routes are assumed to remain the same.

**Alexandria Transit Vision
2030 Midday Network**

Midday Frequency
- OTC — 10 min or better
- 7M — 15 min
- 28A — 20 min
- 10B — 30 min

- M — Metrorail line + station
- MWY — Metroway
- OTC — Old Town Circulator

- To Pentagon Station
- Office/Mixed Use
- Residential Complex
- Retail Center
- Educational Institution

Note: This map only shows routing that operate all-day. For peak-only routes, see 2030 Peak Network map.

Existing Fairfax Connector routes are assumed to remain the same.

*KST is the extended King Street Trolley.

**OTC -Old Town Circulator- is a combination of routes N3 and N4. Anyone on these routes can ride through the King St. Metro into Old Town without transferring.

0   0.5   1 mi

2022 Recommended Network

The 2022 Draft Recommended Network (Figure 7) assumes an 8% increase in service hours for DASH and continued funding from the I-395 Commuter Choice program for additional service in western Alexandria. The additional resources are invested in increasing the frequency of midday service and improving evening and weekend service.

» This map show the weekday midday bus network, which means the frequency of service and routes that are available most of the time, seven days a week. **For 2022 Recommended rush hour service, see Figure 10 on page 12.**

» The 2022 bus system would provide a high frequency network across much of the city.

» This network devotes 80% of resources to service that one would expect to get high ridership relative to cost.

» The other 20% of resources is going to service that is not likely to get high ridership relative to cost, but is meeting other important goals, like covering low density areas with severe needs.

» This network provides frequent transit service to 65% of residents and 66% of jobs in Alexandria on weekdays at midday. This is a significant increase from today, where only 27% of residents and 40% of jobs are near frequent transit.

» This network provides some transit service (no matter the frequency) to 95% of residents and 91% of jobs.

» This network allows the average Alexandrian to reach 23,400 jobs within 45 minutes by walking and transit—**13% more jobs than are reachable with the existing network**.

> The average Alexandrian could reach **13% more jobs within 45 minutes** with this 2022 Recommended Network.

Figure 7: Draft Recommended Network by 2022, <u>Midday Weekday Frequency</u>

Any changes to routes outside of Alexandria will be coordinated with the appropriate jurisdiction and WMATA (where applicable).

Existing Arlington Transit (ART) routes are assumed to remain the same.

Location of temporary Landmark Transit Center to be determined during construction.

**Alexandria Transit Vision
2022 Midday Network**

Midday Frequency
- OTC — 10 min or better
- 7M — 15 min
- 28A — 20 min
- 10B — 30 min

- M — Metrorail line + station
- MWY — Metroway
- OTC — Old Town Circulator

- To Pentagon Station
- Office/Mixed Use
- Residential Complex
- Retail Center
- Educational Institution

Note: This map only shows routing that operate all-day. For peak-only routes, see 2022 Peak Network map.

*KST is the extended King Street Trolley.

**OTC -Old Town Circulator- is a combination of routes N1, N3, and N4. Anyone on these routes can ride through the King St. Metro into Old Town without transferring.

Existing Fairfax Connector routes are assumed to remain the same.
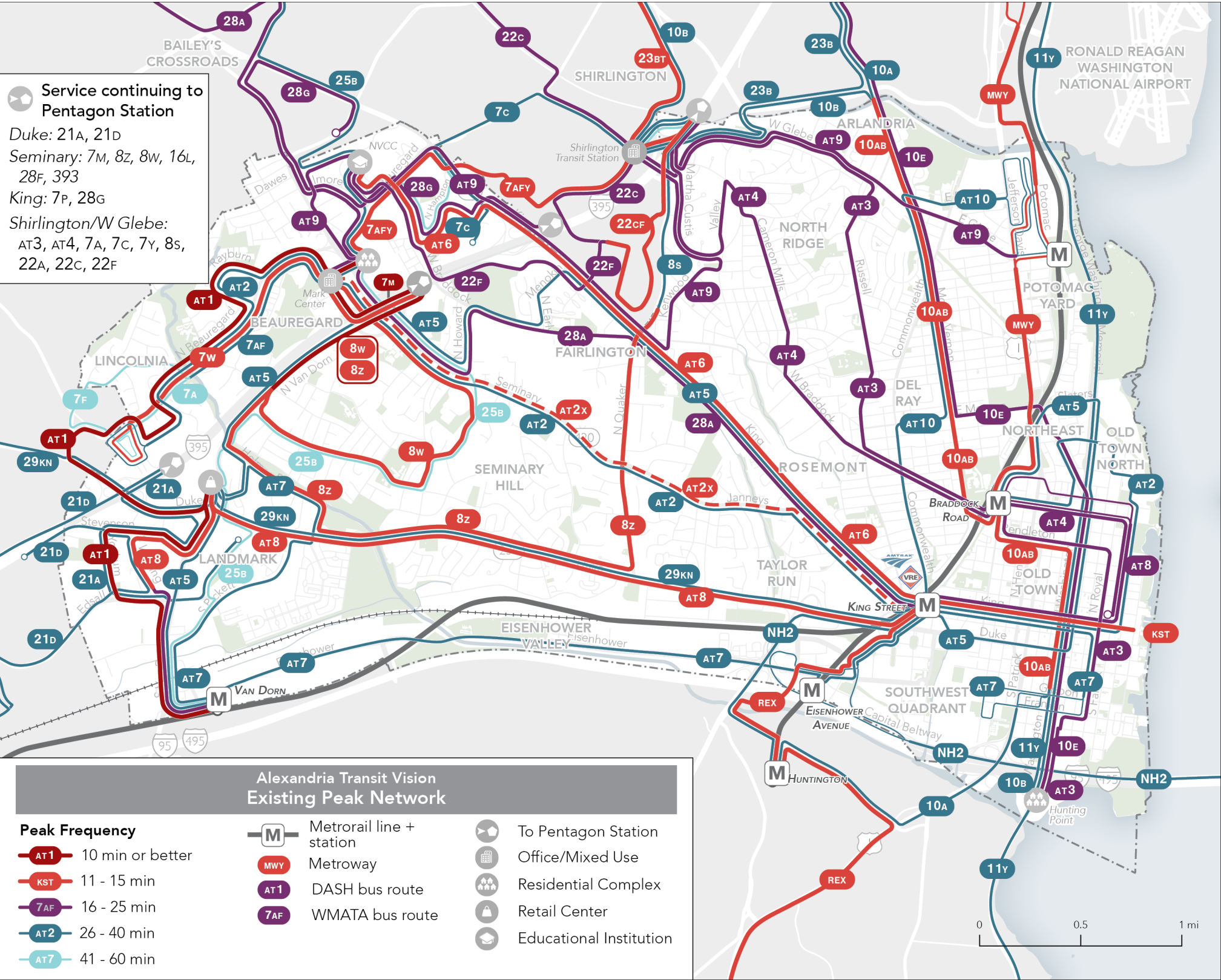
Existing Peak System

In suburban areas, rush hour demand is often different from the all-day demand, and much more intense. In those contexts it often makes sense to run commuter-oriented services only during the peak period, including entire bus routes that may run only during these times.

Such is the case in Alexandria, as shown in the map of the existing peak bus service in Figure 8. Many routes run only at peak times, like WMATA routes 8W/Z, 21A/D and DASH routes AT2X, AT3, and AT4. Also many routes run more frequently at peak, at least in the peak direction toward Pentagon or Old Town such as DASH routes AT1, AT6, and AT8. The policy direction from the DASH Board was to maintain, as much as possible, peak service levels to all parts of the city.

The existing route network along the I-395 corridor in western Alexandria is particularly complex at peak times. There are numerous changes in route patterns between peak and midday which means that riders can make some trips by one bus in midday but must take two buses at peak times.

Figure 8: Existing System, _Peak Weekday Frequency_

Service continuing to Pentagon Station
Duke: 21A, 21D
Seminary: 7M, 8Z, 8W, 16L, 28F, 393
King: 7P, 28G
Shirlington/W Glebe: AT3, AT4, 7A, 7C, 7Y, 8S, 22A, 22C, 22F

Alexandria Transit Vision
Existing Peak Network

Peak Frequency
- AT1 — 10 min or better
- KST — 11 - 15 min
- 7AF — 16 - 25 min
- AT2 — 26 - 40 min
- AT7 — 41 - 60 min

- M — Metrorail line + station
- MWY — Metroway
- AT1 — DASH bus route
- 7AF — WMATA bus route

- To Pentagon Station
- Office/Mixed Use
- Residential Complex
- Retail Center
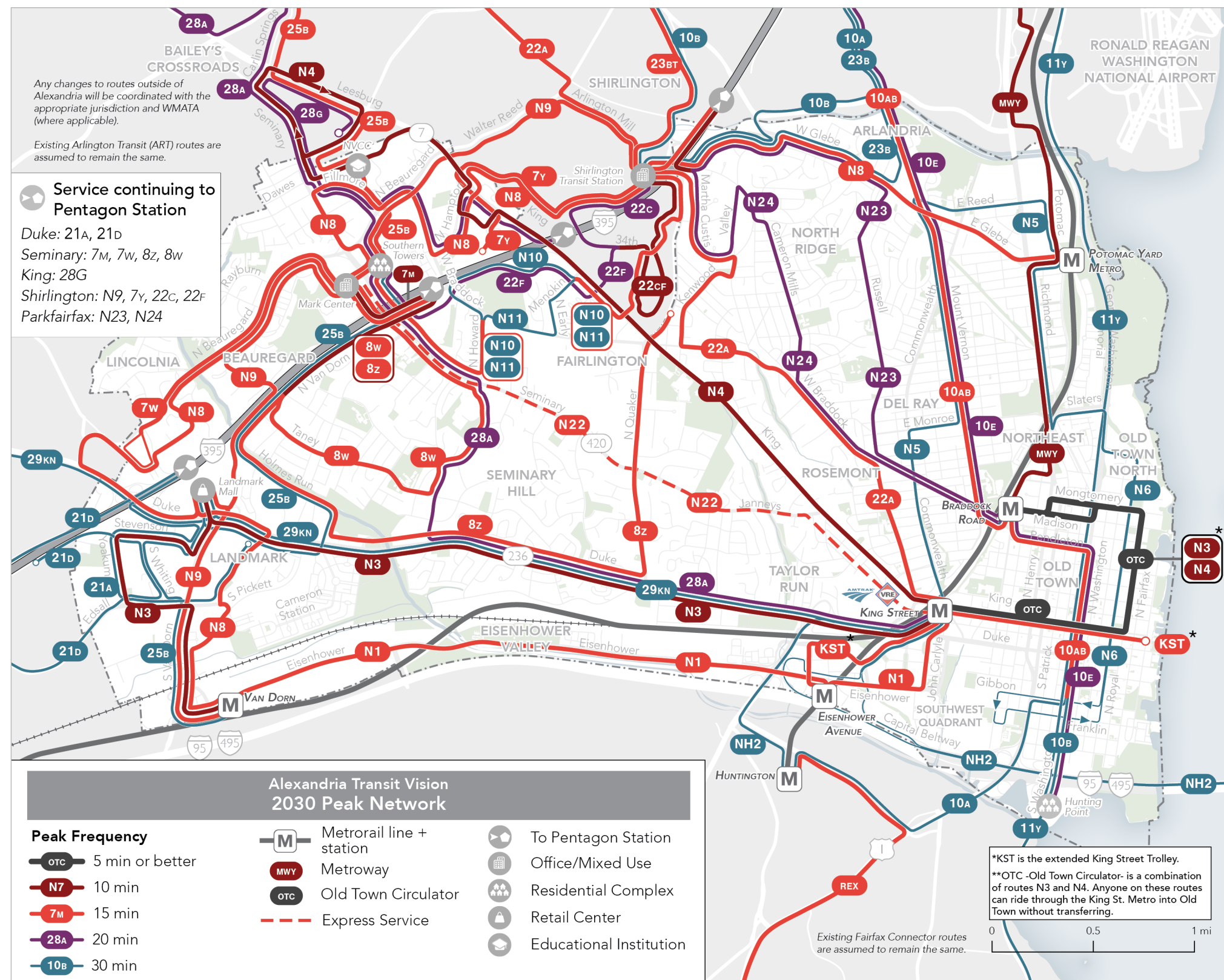- Educational Institution

2030 Peak Network

In redesigning the network, the study team has worked to simplify the peak network, where possible, to ensure that it was overlaid on the all-day network in a logical way. Thus, where possible, the study team maintained all-day route patterns and overlaid rush hour route patterns on the all-day network, for more consistent trip patterns throughout the day.

The 2030 peak network keeps most of the existing peak-only service with some adjustments to account for changes in the all day network.

» WMATA Peak-Only routes 7W, 8W/Z, 11Y, 21A/D, 28F/G are unchanged from the existing network.

» Some existing WMATA Peak-Only routes remain with some changes:

  » 22C/F, 7Y, and 10E are similar to today, but with some adjustments to account for changes in the all-day network.

» Existing DASH Peak-Only routes remain with some changes and the numbers have changed:

  » AT2X is called N22 and runs non-stop from King Street Metro to Mark Center.

  » AT3 is called N23 and runs from Braddock Road Metro to Pentagon via Russell Road and West Glebe Road, similar to the existing network except that it does not serve Old Town.

  » AT4 is called N24 and runs from Braddock Road Metro to Pentagon via Cameron Mills Road and Martha Custis Drive, similar to the existing network except that it does not serve Old Town.

For more details on rush hour service in the 2030 Recommended Network see page 19.

Figure 9: Recommended Network by 2030, Peak Weekday Frequency
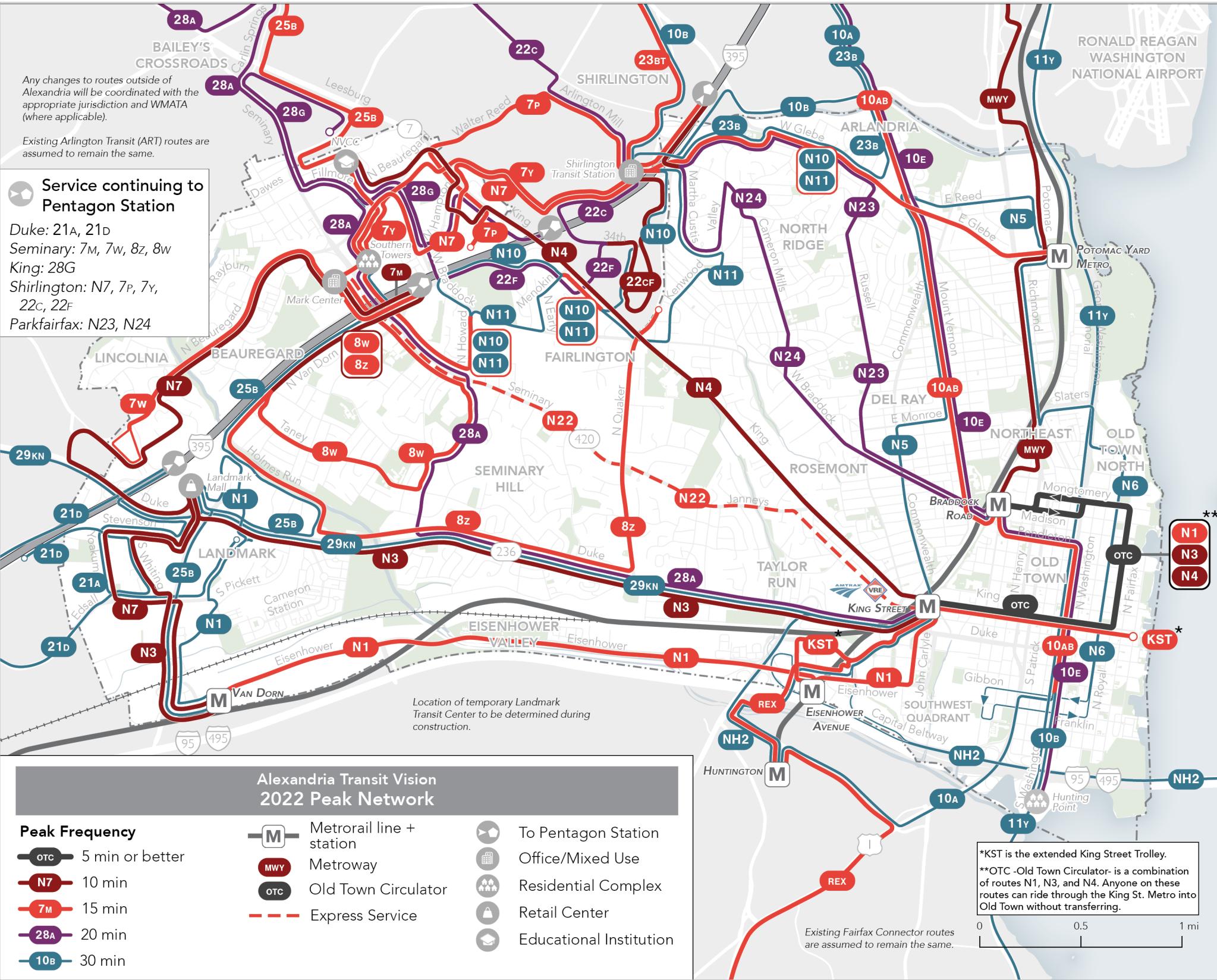
2022 Peak Network

Similar to the redesign of the 2030 peak network, In redesigning the network, the study team has worked to simplify the peak network, to ensure that it was overlaid on the all-day network in a logical way.

The 2022 peak network keeps most of the existing peak-only service with some adjustments to account for changes in the all day network.

» WMATA Peak-Only routes 7C/P/Y/W, 8W/Z, 11Y, 21A/D,22C/F, 28F/G are unchanged from the existing network.

» 10E continues to serve Hunting Point to Pentagon but follows the 10A/B alignment instead of deviating to serve Powhatan Street, as it does today.

» Existing DASH Peak-Only routes remain with some changes and the numbers have changed:

  » AT2X is called N22 and runs non-stop from King Street Metro to Mark Center.

  » AT3 is called N23 and runs from Braddock Road Metro to Pentagon via Russell Road and West Glebe Road, similar to the existing network except that it does not serve Old Town.

  » AT4 is called N24 and runs from Braddock Road Metro to Pentagon via Cameron Mills Road and Martha Custis Drive, similar to the existing network except that it does not serve Old Town.

For more details on rush hour service in the 2030 Recommended Network see page 27.

Figure 10: Recommended Network by 2022, <u>Peak Weekday Frequency</u>

Service continuing to Pentagon Station

Duke: 21A, 21D
Seminary: 7M, 7W, 8Z, 8W
King: 28G
Shirlington: N7, 7P, 7Y, 22C, 22F
Parkfairfax: N23, N24

Any changes to routes outside of Alexandria will be coordinated with the appropriate jurisdiction and WMATA (where applicable).

Existing Arlington Transit (ART) routes are assumed to remain the same.

Location of temporary Landmark Transit Center to be determined during construction.

Existing Fairfax Connector routes are assumed to remain the same.

*KST is the extended King Street Trolley.

**OTC -Old Town Circulator- is a combination of routes N1, N3, and N4. Anyone on these routes can ride through the King St. Metro into Old Town without transferring.

Alexandria Transit Vision
2022 Peak Network

Peak Frequency
- OTC — 5 min or better
- N7 — 10 min
- 7M — 15 min
- 28A — 20 min
- 10B — 30 min

- M — Metrorail line + station
- MWY — Metroway
- OTC — Old Town Circulator
- - - - Express Service

- To Pentagon Station
- Office/Mixed Use
- Residential Complex
- Retail Center
- Educational Institution

What's Next?

The Draft Recommended Network is presented in this report for the consideration of the public, transit riders, community organizations, workers, businesses, and all other transit stakeholders in Alexandria.

In October and November, the Alexandria Transit Vision team is soliciting public input and comments on this Draft Recommended Network. Those comments will be considered before the preparation of the Final Recommended Network.

The Final Recommended Network will be delivered to the City of Alexandria and DASH this winter, for potential implementation in 2022 and beyond. The changes shown in the 2022 Recommended Network could start being implemented as early as fall 2020, while the longer-term network would be in place by 2030. Figure 11 provides an overview of the project timeline.

Learn More

For the full story of this process, we encourage the reader to start with two earlier reports:

» The Choices Report, released in September 2018, available at the project website.

» The Concepts Report, released in February 2019, available at the project website.

Members of the public are encouraged to attend public meetings and submit comments online, in response to this Draft Recommended Network. To find public meetings and other opportunities for input, visit www. dashbus.com/transitvision.

Your opinion matters!
Go to www.dashbus.com/transitvision
and take the survey!

Figure 11: Process and Timeline for Alexandria Transit Vision

Throughout the plan there will be:

■ Updates to the project website

■ Civic engagement opportunities

■ Coordination meetings with other jurisdictions and transit providers

■ Briefings to City leadership

Technical Work

Engagement

Spring 2018 — Project kickoff

Summer 2018 — Analysis of existing and future conditions

Fall 2018 — Engagement Round 1: Choices
■ Community meetings and survey
■ Stakeholder workshop

Develop and analyze draft bus network concepts

Winter 2019 — Engagement Round 2: Concepts
■ Community meetings and survey
■ Stakeholder workshop

Develop final bus network

Fall 2019 — Draft plan and near-term recommendations

Late 2019 — Final Transit Vision Plan and Near-Term Implementation Plan

2. 2030 and 2022 Recommended Networks

Draft Recommended Networks

This chapter presents maps of the Draft Recommended Networks, information about how the networks would operate, and how they would improve accessibility by transit and proximity to service.

These networks were developed by a team of technical experts from the City of Alexandria, DASH, WMATA, and transit planning experts from Kimley-Horn and Associates and Jarrett Walker + Associates. The policies that guided the design of this network are based on public input on key transit choices, as described in the previous chapter, and guidance from the DASH Board of Directors and the City of Alexandria Transportation Commission.

In October and November 2019, these networks will be presented to the public, bus riders, the Stakeholder Committee, and elected and appointed officials. Feedback on the networks, and comments on specific details, will be considered in the refinement of these networks to create the final recommendations.

The maps in this chapter show the 2030 and 2022 Draft Recommended Networks, also called the Long-Term and Short-Term Networks. **The first map of each network is the midday network, which is the service generally available all day and on weekends.** The second map of each network shows the weekday peak service network, which generally has more frequent service on many routes and additional routes.

The tables after each set of maps show the frequency of each route over the hours of each day and the days of each week. Charts also describe the change in residents and jobs accessible to frequent transit.

Policy Basis

The 2030 Recommended Network is designed to fulfill a policy direction from the DASH Board and City Transportation Commission that:

» About 85% of the transit budget in the City of Alexandria should be spent on maximizing ridership.

» The remaining 15% should be spent covering those places where transit service is valued, even if ridership relative to cost is low.

» A 20% increase in transit investment for both DASH and WMATA. It also assumes continued funding from the I-395 Commuter Choice program for service improvements in western Alexandria.

The 2022 Network is designed as a first step to implementation of the 2030 Network.

Network Assumptions

Bus-to-Rail/Rail-to-Bus Transfer

Though it is not essential to the operation of the networks, it is assumed that in the near future the fare penalty for transferring between Metrorail and bus is eliminated. This would mean that if you rode Metrorail, a transfer to a local bus would be free. When transferring from bus to Metrorail, the full bus fare would be deducted from the rail fare, since rail fares are variable by distance and time of day and are usually higher than bus fares.

Potomac Yard Metrorail

The City and WMATA are working together to construct an in-fill station (a new station on an existing transit line) on the Blue and Yellow Metrorail lines in the Potomac Yard neighborhood of Alexandria. There will be facilities provided to accommodate bus-rail connections to the station. Both the 2022 and 2030 Recommended Networks assume the station is open and that Metrorail service is operating at its current frequency and span of service.

Expanding Weekend and Evening Service

Evening and weekend service is relatively inexpensive to operate compared to peak service, and it is crucial to a large segment of transit riders. People who work in most retail and entertainment sectors have to work on weekends and often late into the evening. Having some transit then is important in order for them to rely on transit at all.

Houston recently had great success with a network redesign that extended evening service and expanded Saturday and Sunday service to be the same level as weekday service, but without the peak period.

The 2030 Recommended Network dramatically expands weekend and evening service and generally makes hours of service more consistent among all routes. The 2022 Recommended Network includes better evening and weekend service, but only if the City and DASH can increase service hours by 8%.

Metroway

Both recommended networks assume that more dedicated space is provided for Metroway through the new development in Potomac Yard and that service is standardized to operate between Pentagon City and Braddock Road Metrorail stations every 10 minutes or better for most of the day.

West End Transitway and Duke Street Transitway

In the western parts of Alexandria, the City is proposing a Bus Rapid Transit (BRT) system to provide high-capacity transit service using a combination of dedicated and shared lanes and high-quality stations with rider amenities. The ultimate vision is for the West End Transitway to connect major transit centers, like Van Dorn Metro Station, Mark Center Transit Center, Shirlington Transit Center, and the Pentagon Transit Center, with several neighborhoods along the corridor, including Landmark, a redeveloped Landmark Mall, and Beauregard corridor.

Along Duke Street, the City is studying improvements to increase the speed and reliability of bus service. The City is studying a variety of possible measures, including dedicated lanes, queue jump lanes at intersections, and transit signal priority.

The 2030 Recommended Network assumes that the transit signal priority elements of the West End Transitway and Duke Street Transitway have been built. The 2030 Network includes a route (N9) that would use the West End Transitway while the N3 route would use the Duke Street Transitway.

Southern Towers and Landmark Mall

Both recommended networks assume that new transit centers are built on-site at Southern Towers and at the redeveloped Landmark Mall property. The new Southern Towers transit center would replace the multiple stops that routes make today in the parking lot of the towers. Both transit centers would allow people to make easy connections between local routes in Western Alexandria, connect between local routes and the West End Transitway route, and to and from routes that would use the I-395 HOT lanes to get

to Pentagon Metrorail station. The timing of when these new transit centers are built is uncertain, but they are important for the long-term connectivity of the 2030 network in particular.

Potomac Yard Development and Amazon

Both Recommended Networks were designed with the North Potomac Yard Small Area Plan and Crystal City Sector Plan for Arlington County as well as the Amazon HQ2 proposals in mind. The North Potomac Yard Small Area Plan envisions a substantial increase the number of jobs and residents in the area, with many multi-story buildings across most of the area. Also, the study team was aware of the high likelihood of substantial development and redevelopment in this part of the city, particularly with the Virginia Tech Innovation Campus planned for this area. Therefore, both Recommended Networks assume the level of activity in Potomac Yard, Crystal City, and Pentagon City would increase and, therefore, services to these areas are improved in both networks.

Existing System

Figure 12 shows Alexandria's bus network, with every route color-coded based on its frequency during midday on a weekday. This should be the point of comparison for understanding how the Draft Recommended Network is different from today's system.

The map at right reveals that at midday, most Alexandria routes offer 30-minute frequency; three routes offer 20-minute frequency; and only the Metroway and King Street Trolley offer service every 15 minutes or better (which is the transit industry norm for calling service "frequent"). There are also a few lower frequency routes like AT7 on Eisenhower Avenue that run every 60 minutes.

The Existing Network devotes 50% of resources to service that one would expect to get high ridership relative to cost. The other 50% of resources is going to service that is not likely to get high ridership relative to cost, but is meeting other important goals, like covering low density areas with severe needs. **Thus we would say that this network is 50% Ridership and 50% Coverage.** For a deeper explanation of the ridership-coverage trade-off and balance between those two goals, see the Choices Report.

Figure 12: Existing System, Midday Weekday Frequency

Alexandria Transit Vision
Existing Midday Network

Midday Frequency
- KST — 15 min or better
- 7AF — 16 - 25 min
- AT2 — 26 - 40 min
- AT7 — 41 - 60 min

- M — Metrorail line + station
- MWY — Metroway
- AT1 — DASH bus route
- 7AF — WMATA bus route

Note: This map only shows routing that operate all-day. For peak-only routes, see Existing Peak Network map.

- To Pentagon Station
- Office/Mixed Use
- Residential Complex
- Retail Center
- Educational Institution

2030 Draft Recommended Network

The Draft Recommended Network creates a grid of high frequency routes to get more people to more places in less time. The 2030 Network includes more investment in service and a shift in policy to focus more on ridership with **85% of transit resources going towards ridership goals and 15% toward coverage goals.**
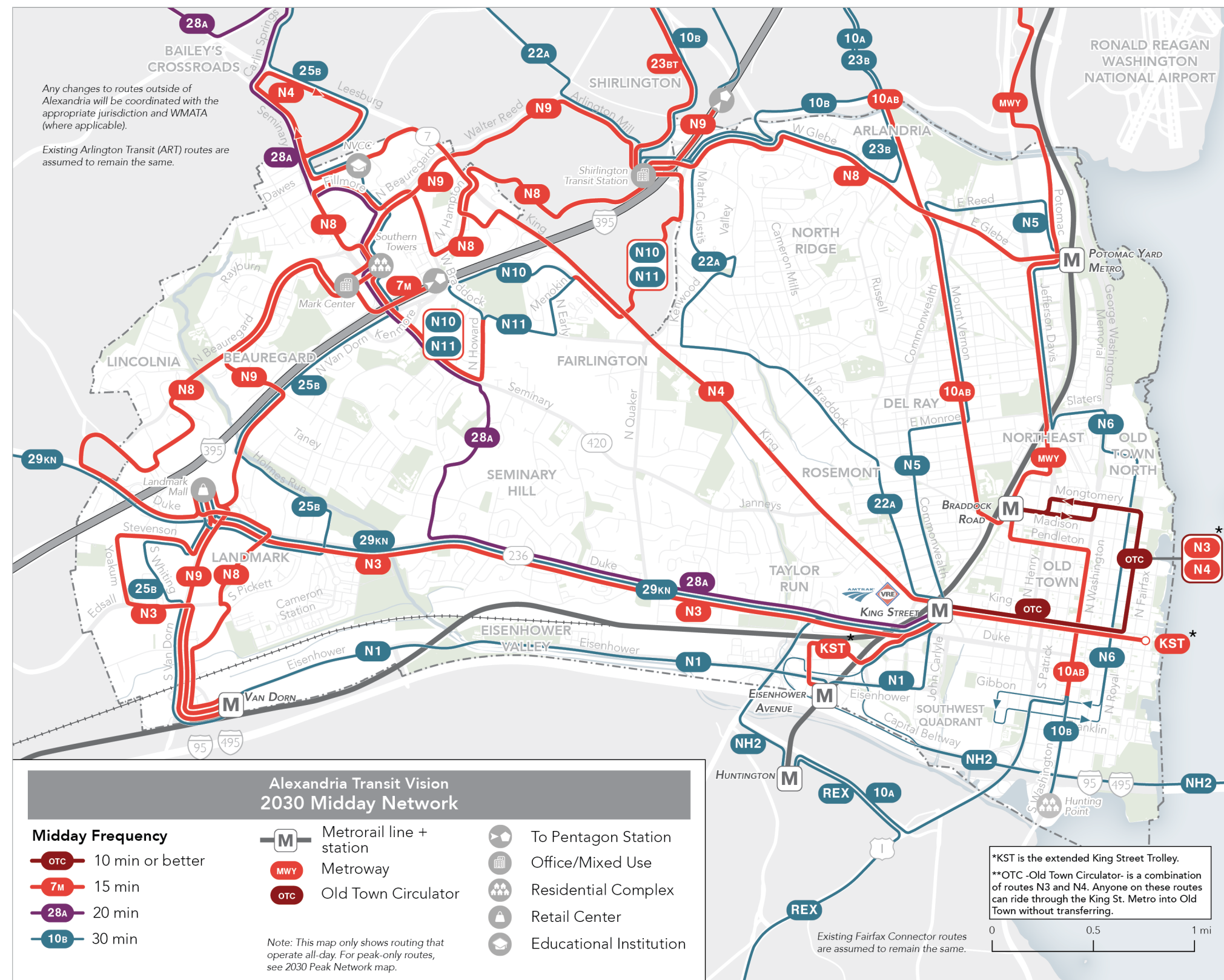
With this emphasis on ridership, this network can provide frequent all-day service on radial routes from Old Town on Duke Street (N3), King Street (N4), Mount Vernon Avenue (10A/B), Richmond Highway (Metroway), and to Eisenhower East (with an extension of the King Street Trolley) as well as two orbital corridors from the Van Dorn Metro Station to Shirlington with one orbital going to Pentagon Metro (N9) and the other going to the new Potomac Yard Metro Station (N8).

The radial routes N3 and N4 combine together at the King Street Metro Station to form the Old Town Circulator. This combined route provides 7 to 8 minute frequency within Old Town between the King Street and Braddock Road Metro Stations via King, Fairfax, and Madison/Montgomery Streets. For more details on the Old Town Circulator, see page 36.

In addition, evening and weekend frequent service has been extended to keep a frequent grid running later into the evening and on weekends. Some lower frequency service remains with several routes with 30-minute service connecting key places:

» N1 serves the Eisenhower corridor from Van Dorn Metro to King Street Metro.

» N6 serves southern and northern parts of Old Town.

» N10 & N11 serve parts of Howard Street, Seminary Road, Bradlee Shopping Center, to Shirlington.

» 25B is similar to today's route, connecting from Ballston to Southern Towers and then south to Landmark via Van Dorn Street to Van Dorn Metro.

» 22A is very different than today. It still connects from Ballston to Shirlington, but then connects to King Street Metro via Parkfairfax and Braddock Road.

» N5 is similar to the current AT10, connecting the Del Ray community with King Street Metro and the future Potomac Yard Metro station.

Figure 13: Recommended Network by 2030, <u>Midday Weekday Frequency</u>

Any changes to routes outside of Alexandria will be coordinated with the appropriate jurisdiction and WMATA (where applicable).

Existing Arlington Transit (ART) routes are assumed to remain the same.

Alexandria Transit Vision
2030 Midday Network

Midday Frequency

OTC	10 min or better	
7M	15 min	
28A	20 min	
10B	30 min	

- M — Metrorail line + station
- MWY — Metroway
- OTC — Old Town Circulator
- To Pentagon Station
- Office/Mixed Use
- Residential Complex
- Retail Center
- Educational Institution

Note: This map only shows routing that operate all-day. For peak-only routes, see 2030 Peak Network map.

*KST is the extended King Street Trolley.

**OTC -Old Town Circulator- is a combination of routes N3 and N4. Anyone on these routes can ride through the King St. Metro into Old Town without transferring.

Existing Fairfax Connector routes are assumed to remain the same.

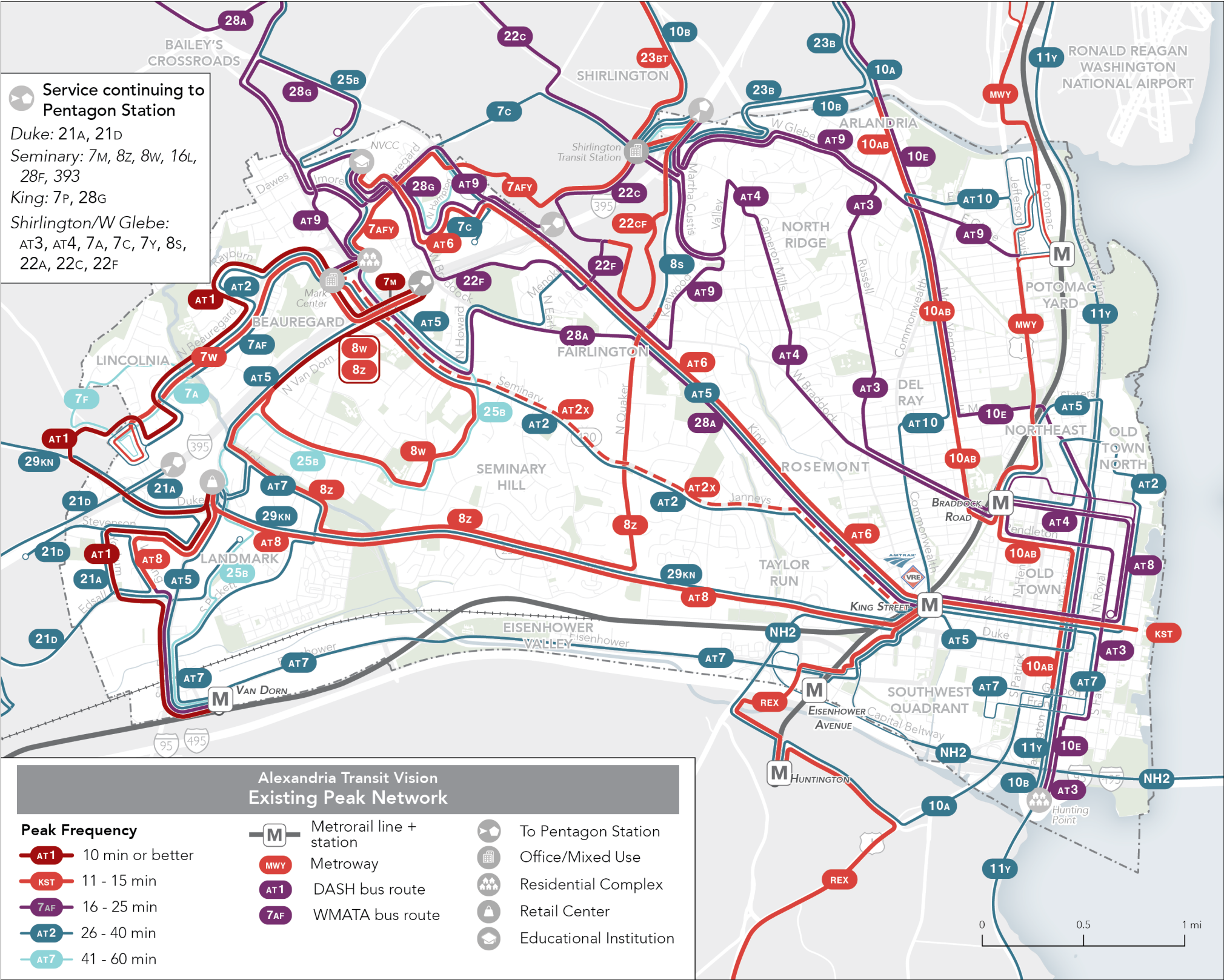0   0.5   1 mi

Existing Peak System

In suburban areas, rush hour demand is often different from the all-day demand, and much more intense. In those contexts it often makes sense to run commuter-oriented services only during the peak period, including entire bus routes that may run only during these times.

Such is the case in Alexandria, as shown in the map of the existing peak bus service in Figure 14. Many routes run only at peak times, like WMATA routes 8W/Z, 21A/D and DASH routes AT2X, AT3, and AT4. Also many routes run more frequently at peak, at least in the peak direction toward Pentagon or Old Town such as DASH routes AT1, AT6, and AT8. The policy direction from the DASH Board was to maintain, as much as possible, peak service levels to all parts of the city.

As shown in Figure 14, the existing route network along the I-395 corridor in western Alexandria is particularly complex at peak times. There are numerous changes in route patterns between peak and midday which means that riders can make some trips by one bus in midday but must take two buses at peak times.

In redesigning the network, the study team has worked to simplify the peak network, where possible, to ensure that it was overlaid on the all-day network in a logical way. Thus, where possible, the study team maintained all-day route patterns and overlaid rush hour route patterns on the all-day network, for more consistent trip patterns throughout the day.

Figure 14: Existing System, <u>Peak Weekday Frequency</u>

Service continuing to Pentagon Station

Duke: 21A, 21D
Seminary: 7M, 8Z, 8W, 16L, 28F, 393
King: 7P, 28G
Shirlington/W Glebe: AT3, AT4, 7A, 7C, 7Y, 8S, 22A, 22C, 22F

Alexandria Transit Vision
Existing Peak Network

Peak Frequency
- AT1 — 10 min or better
- KST — 11 - 15 min
- 7AF — 16 - 25 min
- AT2 — 26 - 40 min
- AT7 — 41 - 60 min

- M — Metrorail line + station
- MWY — Metroway
- AT1 — DASH bus route
- 7AF — WMATA bus route

- To Pentagon Station
- Office/Mixed Use
- Residential Complex
- Retail Center
- Educational Institution

2030 Peak Network

The 2030 peak network keeps most of the existing peak-only service with some adjustments to account for changes in the all day network.

» WMATA Peak-Only Routes 7W, 8W/Z, 11Y, 21A/D, 28F/G are unchanged from the existing network.

» Some existing WMATA Peak-Only routes remain with some changes:

   » 22C/F operate similar to today except that 22C begins and ends at Shirlington and 22F begins and ends at Southern Towers. The revised Route 22A serves Ballston to Shirlington to King Street Metro via Parkfairfax and Braddock Road every 15 minutes during peak hours.

   » 7Y now begins and ends at Park Center and goes through North Fairlington to Shirlington and on to Pentagon and Farragut Square. This is changed because the N9 now serves Walter Reed Drive and there is no longer a 7C serving that corridor.

   » 10E continues to serve Hunting Point to Pentagon but follows the 10A/B alignment instead of deviating to serve Powhatan Street, as it does today.

» Some existing DASH Peak-Only routes remain with some changes and the numbers have changed:

   » AT2X is called N22 and runs non-stop from King Street Metro to Mark Center. Currently, the AT2X is funded by the Department of Defense (DoD), which requires that the service be non-stop. If DoD were willing to allow this route (N22) to have intermediate stops, then buses could stop at Taylor Run Parkway, and Fort Williams Parkway to provide peak service to areas that otherwise would not have any service. Additional coordination with DoD staff would be required for any changes to this route.

   » AT3 is called N23 and runs from Braddock Road Metro to Pentagon via Russell Road and West Glebe Road, similar to the existing network except that it does not serve Old Town.

   » AT4 is called N24 and runs from Braddock Road Metro to Pentagon via Cameron Mills Road and Martha Custis Drive, similar to the existing network except that it does not serve Old Town.

In addition to the above, many routes have higher frequency at peak compared to midday, including N1 on Eisenhower Avenue, N3 on Duke Street, N4 on King Street, and Metroway.

Figure 15: Recommended Network by 2030, Peak Weekday Frequency

Any changes to routes outside of Alexandria will be coordinated with the appropriate jurisdiction and WMATA (where applicable).

Existing Arlington Transit (ART) routes are assumed to remain the same.

Service continuing to Pentagon Station
Duke: 21A, 21D
Seminary: 7M, 7W, 8Z, 8W
King: 28G
Shirlington: N9, 7Y, 22C, 22F
Parkfairfax: N23, N24

Alexandria Transit Vision 2030 Peak Network

Peak Frequency
- OTC — 5 min or better
- N7 — 10 min
- 7M — 15 min
- 28A — 20 min
- 10B — 30 min

- M — Metrorail line + station
- MWY — Metroway
- OTC — Old Town Circulator
- - - - Express Service

- To Pentagon Station
- Office/Mixed Use
- Residential Complex
- Retail Center
- Educational Institution

*KST is the extended King Street Trolley.
**OTC -Old Town Circulator- is a combination of routes N3 and N4. Anyone on these routes can ride through the King St. Metro into Old Town without transferring.

Existing Fairfax Connector routes are assumed to remain the same.

0   0.5   1 mi

Existing Span of Service

For transit to be useful, it must be there at the times of day you need it. The times of day transit operates is called "span of service." In today's transit network in Alexandria, only three DASH routes provide service after 11 pm, and only one route, AT8, serves customers after midnight. Metrobus provides some service after 11 pm on four routes.

Frequency of service varies dramatically throughout the day and week, with most service concentrated in the weekday rush hours. Only one DASH route provides frequent service at midday, the King Street Trolley; however, the King Street Trolley doesn't operate at all in the morning peak. The AT6 and AT7 do not operate at all on weekends and some routes become more complex to make up for those that disappear. For example, on weekdays the AT7 serves Eisenhower Avenue with hourly service, but doesn't run on Saturdays and Sundays. Instead, the existing AT5 is extended to serve Eisenhower Avenue on those days.

The inconsistencies in frequency and which routes are available throughout the day make the network more difficult to understand, and limit the types of trips for which the network can be useful.

Limited evening and weekend service reduces the usefulness of the existing network for many potential riders.

Figure 16: Frequency/Span Chart for the Existing System
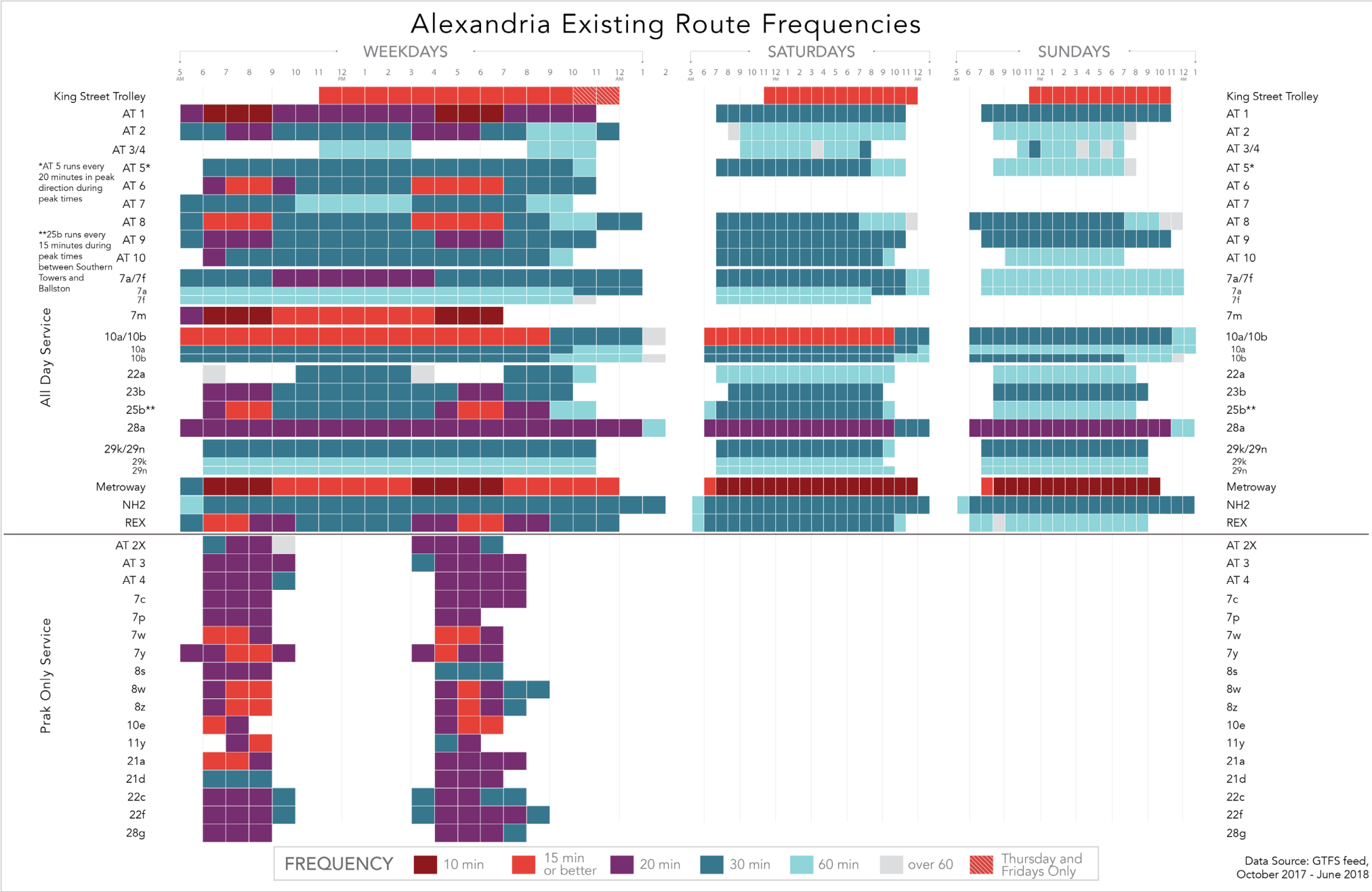
2030 Span of Service

The chart to the right (Figure 17) shows the frequency of service by time of day and day of the week for the 2030 Draft Recommended Network. Looking at this chart, one can see that Route N1 would have 15-minute service from 6 am to 9 am and 4 pm to 7 pm on weekdays, 30 minute service in the midday and evenings on weekdays, and 30-minute service from 6 am to 1 am on weekends.

In the 2030 Recommended Network, most service is more consistent across the day and week. Saturdays and Sundays have frequency of service and spans of service that are much closer to midday on weekdays than in the existing system.

For example, the N1, which serves Eisenhower Avenue from Van Dorn Metro to King Street Metro, runs 7 days a week, with a minimum of every 30 minute service from 5 am to 1am on weekdays, 6 am to 1 am on Saturdays, and 6 am to 10 pm on Sundays.

> The 2030 Recommended Network has more consistent frequency across most routes, seven days a week. It therefore provides a simpler, easier to understand, and more useful network.

Figure 17: Frequency/Span Chart for the 2030 Draft Recommended Network

Alexandria 2030 Network Route Frequencies
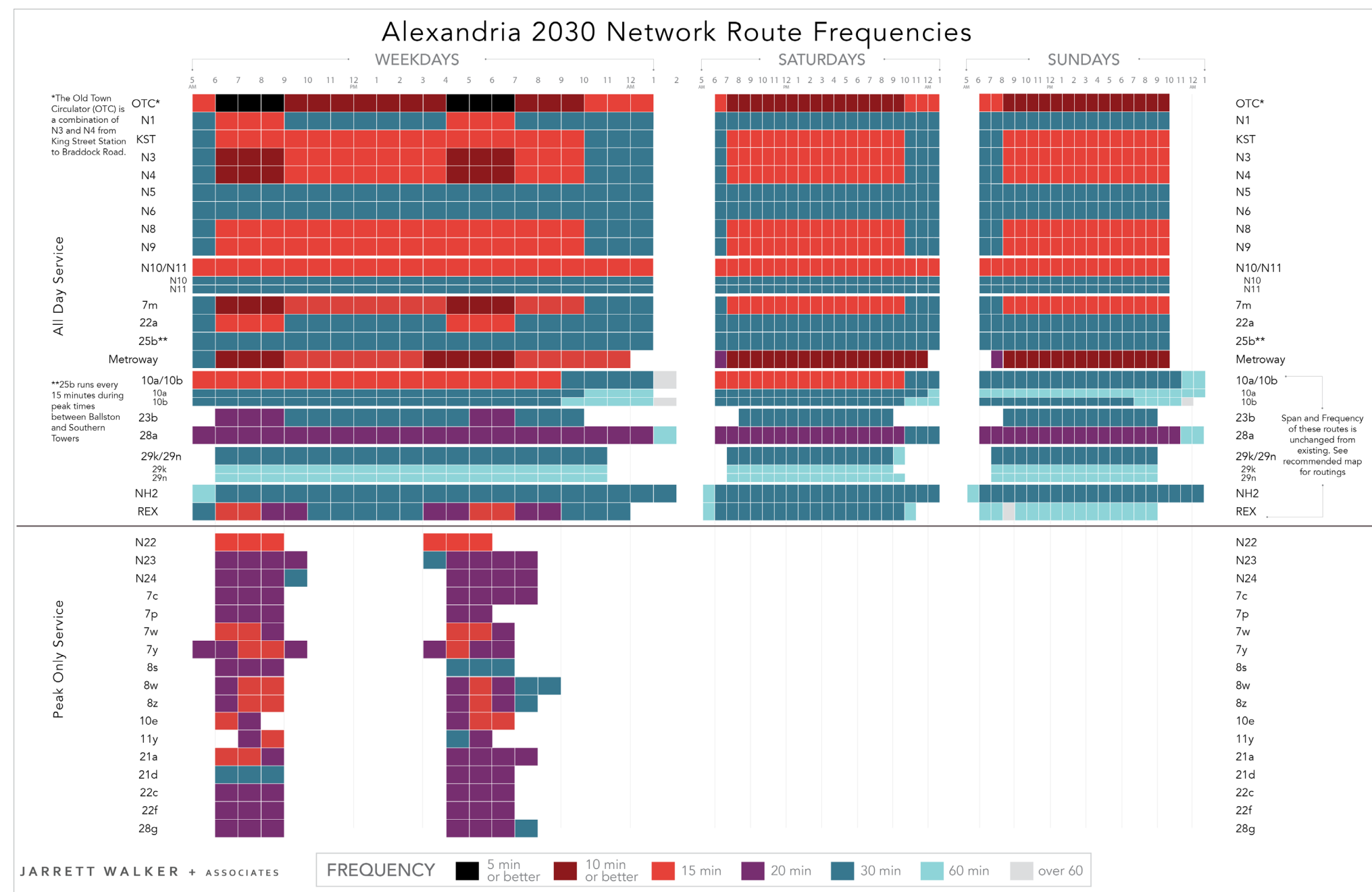
2030 Proximity Analysis

By simply comparing the maps on the previous pages, it is clear that the Draft Recommended Network covers most of the same streets as today's network, but not all. Yet that's not the whole story of how the network covers the city. How many residents and jobs does that geographic coverage represent and how many have access to frequent service?

Figure 18 illustrates how many residents are near—within 1/4 mile—frequent service (every 15 minutes or better), infrequent service, peak-only service, or not near any service under the Draft Recommended Network and the Existing Network.

Only 27% of residents are near frequent service in the Existing Network. The 2030 Recommended Network substantially expands the frequent network so that **79% of residents are near frequent service.**[1]

Proximity to jobs (Figure 19) shows a similar pattern. Only about 40% of all jobs are near frequent service in the Existing Network. The 2030 Recommended Network substantially expands the frequent network **so that 75% of jobs in the city are near frequent service**.[1]

Access to frequent service is a good estimate of potential ridership. While frequency alone is not enough to cause high ridership, frequency deployed along direct routes, in places that are dense, walkable and proximate to one other, does tend to lead to high ridership and lower operating costs.

> The 2030 Recommended Network increases the percent of residents near frequent transit from 27% to 79%. It increases the percent of jobs near frequent service from 40% to 75%.

Figure 18: Residents near Transit on Weekdays, Existing and 2030 Networks

Residents near Transit on Weekdays
within 1/4 mile of a bus stop in Alexandria, Virginia

Legend: ■ Frequent Service, every 15 minutes or better ■ Infrequent ■ Peak Only ■ No Service within 1/4 mile

- Existing Network: 27% | 70% | 0% | 3%
- 2030 Recommended Network: 79% | 12% | 4% | 5%
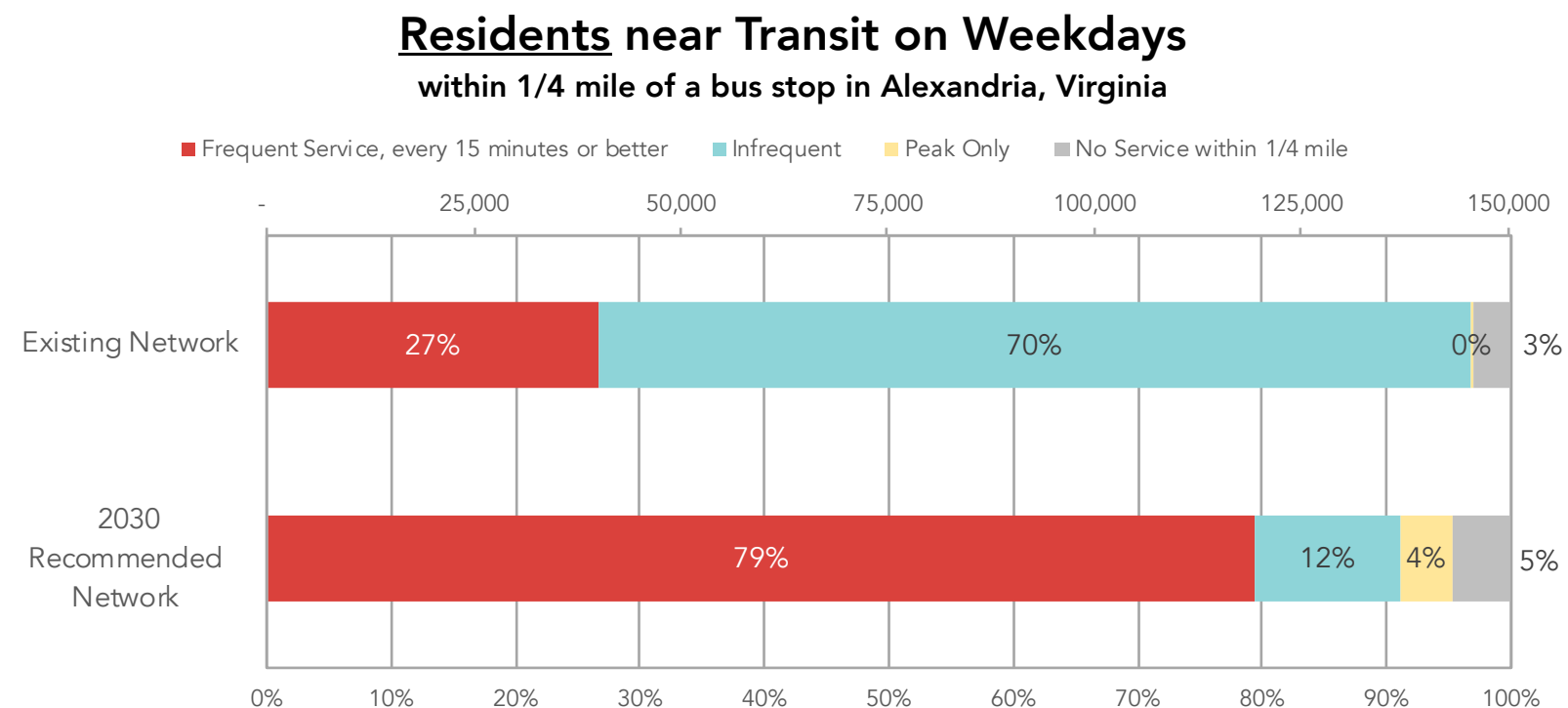
Figure 19: Jobs near Transit on Weekdays, Existing and 2030 Networks

Jobs near Transit on Weekdays
within 1/4 mile of a bus stop in Alexandria, Virginia

Legend: ■ Frequent Service, every 15 minutes or better ■ Infrequent ■ Peak Only ■ No Service within 1/4 mile

- Existing Network: 40% | 50% | 1% | 9%
- 2030 Recommended Network: 75% | 14% | 2% | 9%

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[1] The number and percent of residents and jobs near frequent service in the Existing Network as reported here is lower than what was reported in the Concepts Report published in February 2019. The analysis conducted for that report overstated the residents and jobs near frequent service for the Existing Network and both concepts because it erroneously counted end of line stops on 30 minute routes as having frequent service. This error over-stated the residents and jobs near frequent service for the Existing Network most, because that network included the most 30 minute routes and the fewest 15 minute routes.
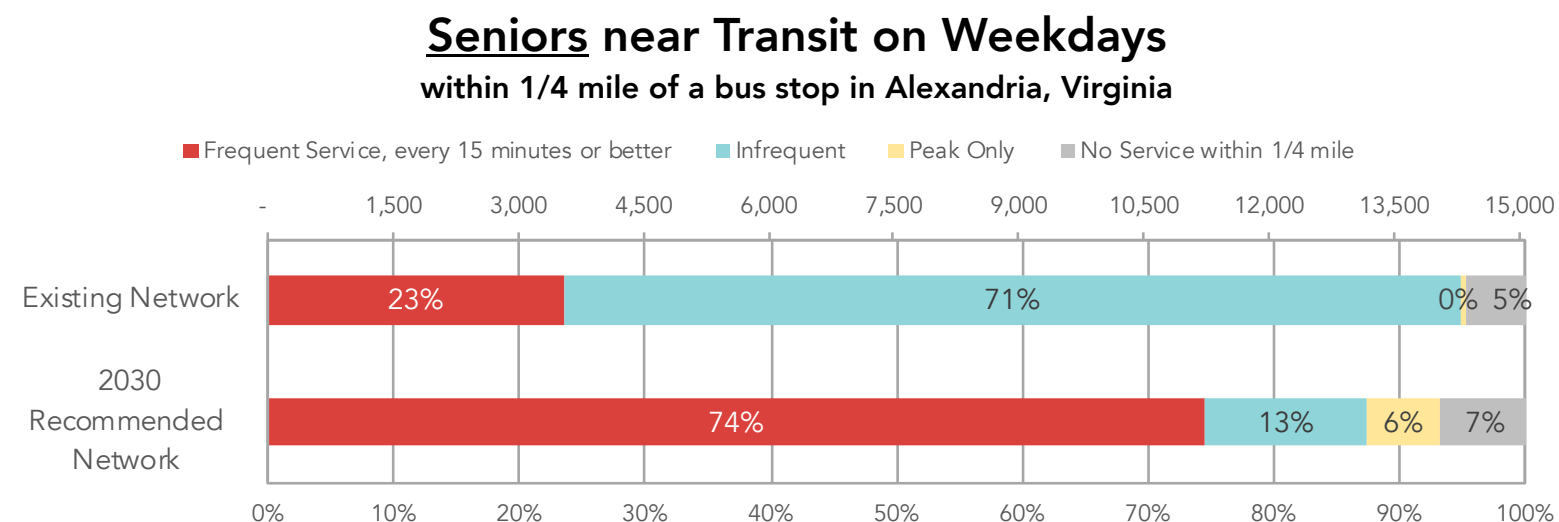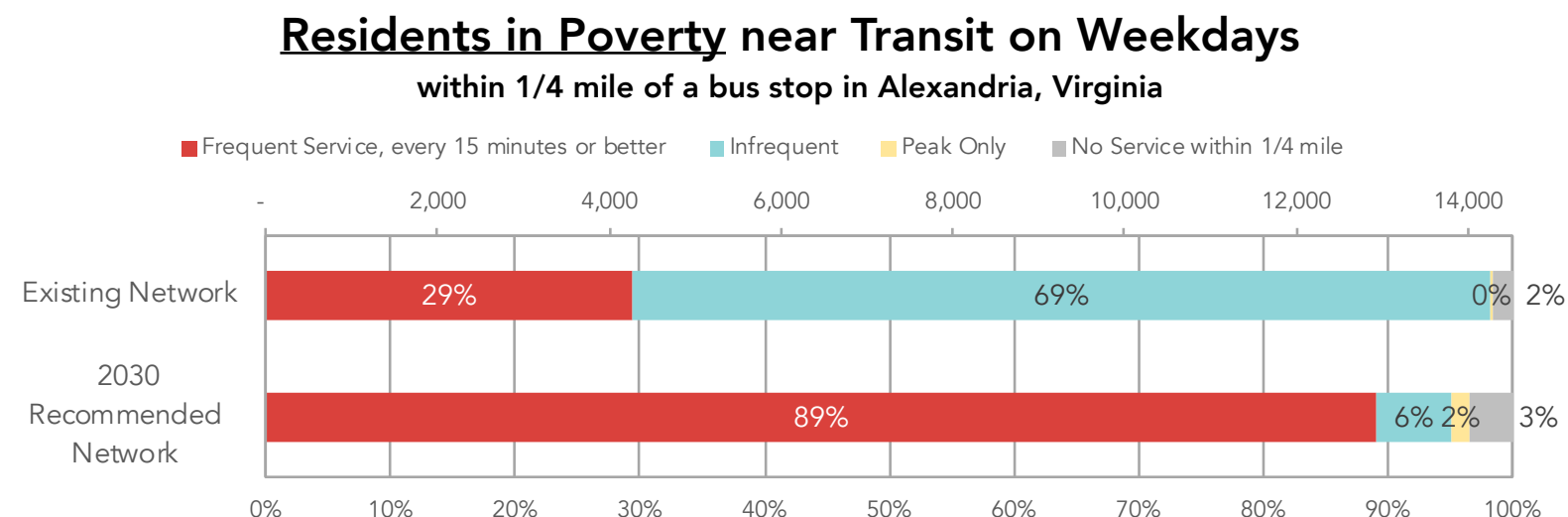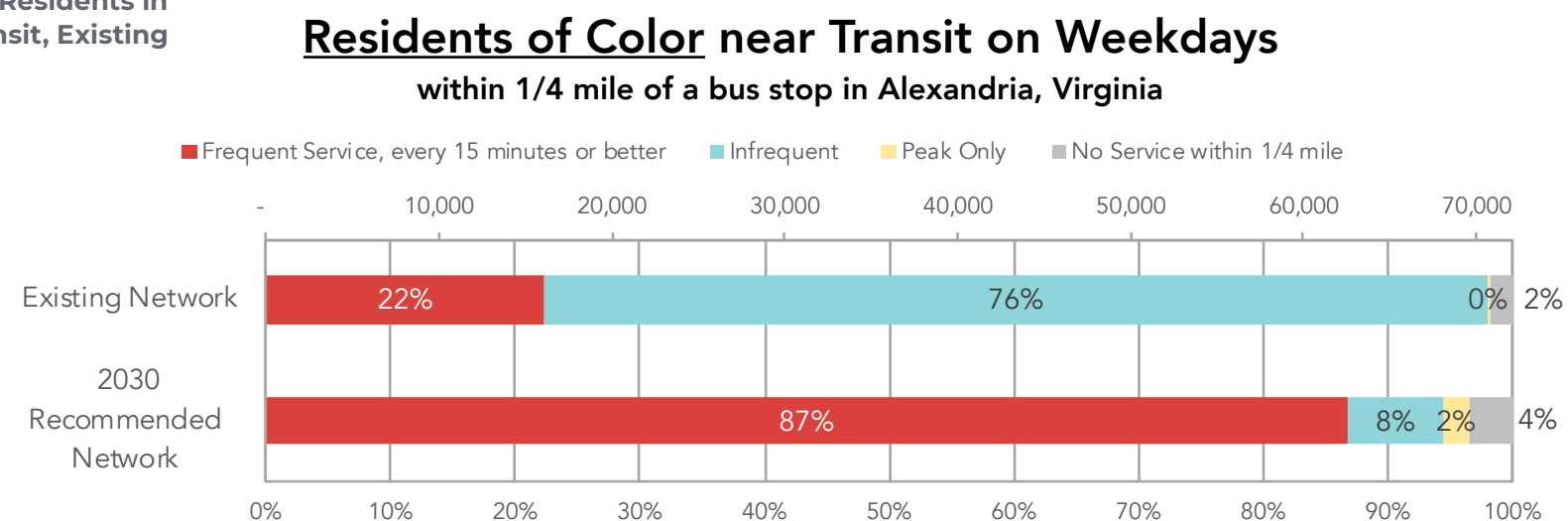
Proximity for Communities of Concern

Transit is often tasked with providing affordable transportation for low-income residents, which is why agencies provide service to some people and areas, regardless of ridership potential. Federal civil rights laws (particularly Title VI) requires that transit agencies assess the impacts of changes to service on minority communities to ensure there are no disproportionate negative impacts. Also, a desire to ensure that older and disabled residents can easily reach transit is another factor that leads cities and transit agencies to design service for coverage goals.

Figure 20 shows the differences in proximity to service for residents of color, residents in poverty, and senior residents. These charts illustrate how many residents in each of these groups are near—within 1/4 mile—frequent service (every 15 minutes or better), infrequent service, peak-only service, or not near any service under the Draft Recommended Network and the Existing Network.

In each case, the number and percent of people near frequent service goes up dramatically. In the Existing Network, only 22% of residents of color are near frequent service, while in 2030 that would increase to 87%—higher than for residents overall. Residents in poverty see a similar dramatic increase in access to frequent service. As with all residents, there is a small increase in the percent of residents of color and residents in poverty who are more than 1/4 mile from service, but that increase is of similar or smaller magnitude than for all residents.

The percent of seniors who are near frequent service increases from 23% to 74%. This increase is slightly less than it is for all residents (27% to 79%). The percent who are more than 1/4 mile from service increases from 5% to 7%, about the same as for all residents (3% to 5%). In general, seniors are slightly less served by frequent transit or any transit than all residents in both the Existing and 2030 Recommended Networks. Seniors are less served by transit today and in the 2030 Network because they are a higher proportion of the population of the lower density parts of the city and thus are already hard to reach by transit. A higher ridership design puts frequent service in higher density parts of the city and thus seniors, on average, do not gain as much as the average resident because the average senior lives in a lower density area.

Figure 20: Residents of Color, Residents in Poverty, and Seniors near Transit, Existing and 2030 Networks

Residents of Color near Transit on Weekdays
within 1/4 mile of a bus stop in Alexandria, Virginia

Legend: Frequent Service, every 15 minutes or better | Infrequent | Peak Only | No Service within 1/4 mile

Existing Network: 22% | 76% | 0% | 2%
2030 Recommended Network: 87% | 8% | 2% | 4%

Residents in Poverty near Transit on Weekdays
within 1/4 mile of a bus stop in Alexandria, Virginia

Legend: Frequent Service, every 15 minutes or better | Infrequent | Peak Only | No Service within 1/4 mile

Existing Network: 29% | 69% | 0% | 2%
2030 Recommended Network: 89% | 6% | 2% | 3%

Seniors near Transit on Weekdays
within 1/4 mile of a bus stop in Alexandria, Virginia

Legend: Frequent Service, every 15 minutes or better | Infrequent | Peak Only | No Service within 1/4 mile

Existing Network: 23% | 71% | 0% | 5%
2030 Recommended Network: 74% | 13% | 6% | 7%

Liberty and Opportunity

The Draft Recommended Network increases the number of people and jobs that have access to high frequency service, meaning that people near these routes or connecting to these routes have much shorter waits for service.

High frequency services, especially in a grid pattern where many connections are possible, maximize the range of useful destinations that can be reached quickly, for the maximum possible number of people.

For a person to choose transit over other modes, transit must provide a reasonable travel time to reach their destination. It stands to reason that when transit offers more people access to more destinations within a shorter travel time, it will attract higher ridership.

We can visualize this change in travel times and access, and compare concepts to one another using this measure. We have analyzed, for several locations around Alexandria, what places can be reached in a fixed amount of time. Maps of this information are called "isochrones."

In the example isochrone in Figure 21, you will see a figure (we call her Jane) placed at Landmark Mall in Alexandria. The map shows where you could travel, in a fixed amount of time, by walking and riding transit. The example shows how far Jane could travel from Landmark Mall in the Existing and Recommended Networks in 30 minutes. More importantly, it tells you how many more people and jobs she could reach with the Recommended Network. In total, there are 15 isochrone examples in Appendix B, showing how the Recommended Network changes access for many different parts of the city.

We sometimes refer to these as maps of liberty and opportunity because that's what they are. If someone chooses to rely on transit, they will be constrained by where transit can readily take them, and will experience the blobs in these images as walls around where they can go and what they can do. For someone to choose to rely on transit, and especially for them to decide to not own a car or to share a car among others, these blobs have to contain enough of the places that make people's lives complete: jobs, education, shopping, services, social opportunities, and so on.

You can use this tool to think about access in the reverse, as well. For a work site or store at the selected point, the isochrones show who could readily get there, the employees it can attract, and the customers who might visit.

Figure 21: Example of Isochrone Maps and Diagram

How far can I travel from Landmark Mall in 30 minutes?

Riders can reach more jobs and opportunities in the 2030 Recommended Network than in the Existing network by walking and transit at noon on a weekday.
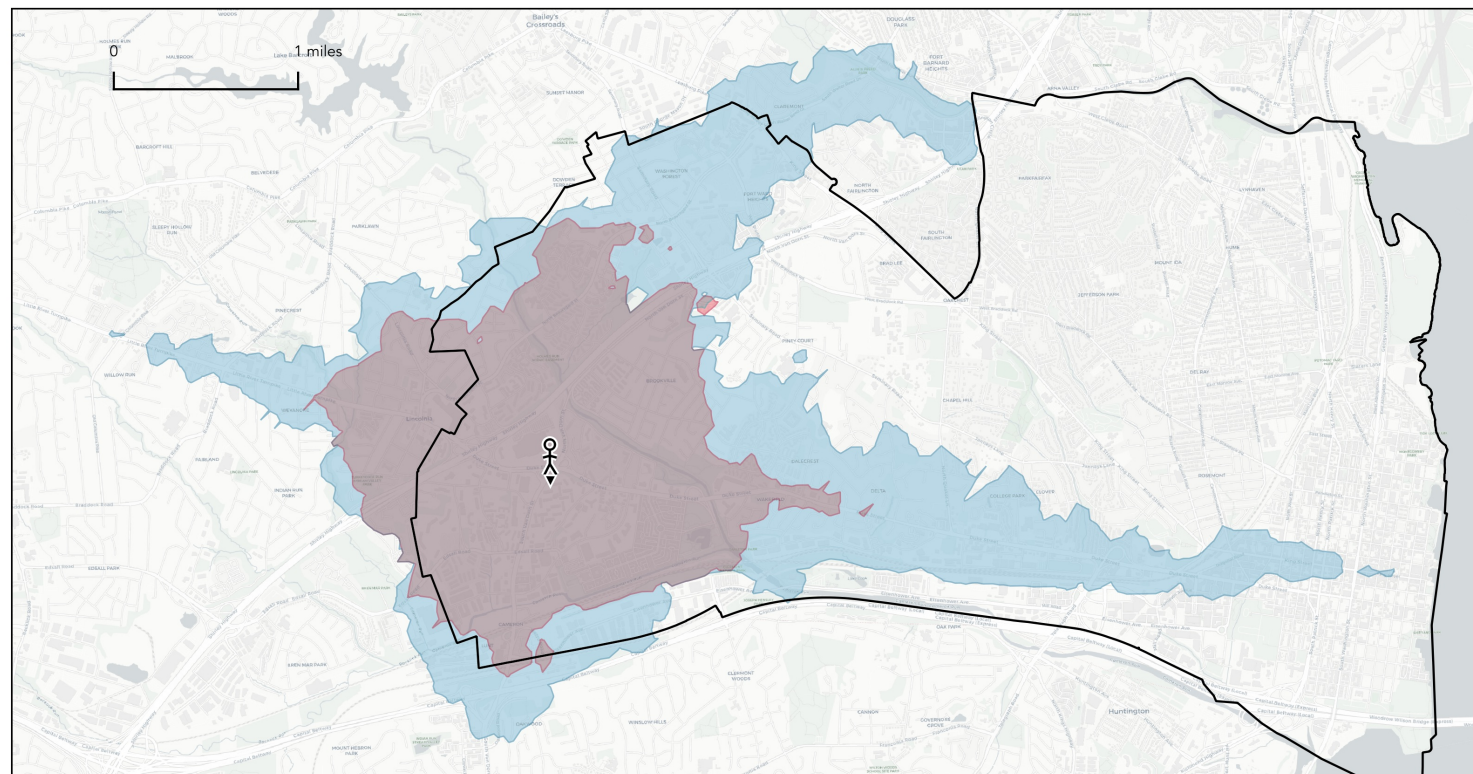
Of course, the real measure of usefulness is not just how much geographic area we can reach, but how many useful destinations we can access within that space. All geographically accurate maps tend to emphasize land area, when what really matters is population and activity. That's why each page in this section shows not just isochrones, but also reports the number of jobs and residents within each isochrone, in accompanying tables.

It has long been known that a good indicator of the ridership from a place is how many other useful places can be reached quickly from there, weighted by the number of people likely to be attracted to each of those destinations. More ridership arises from service being useful, for more people, to get to more places. Computer models that predict ridership have always been doing this analysis, behind the scenes.

Ridership is not the only payoff of large isochrones. Liberty and opportunity have their own value to Alexandrians, aside from how they affect transit ridership. For lower income people, transportation is the biggest barrier to employment, and can also limit access to education. When low-income people are able to get to more places in less time, it means they have more choices in their lives, and in that sense, more freedom.

Draft Recommended 2030 Network
67% more residents and 202% more jobs accessible than existing network

2030 Access to Jobs

The analysis of liberty and opportunity can be expanded to assess every part of the city and see how it is affected by the new network. This is done by assessing the change in access from points all across the city and then summarizing the results as a heat map or grid of hexagons as shown in Figure 22.
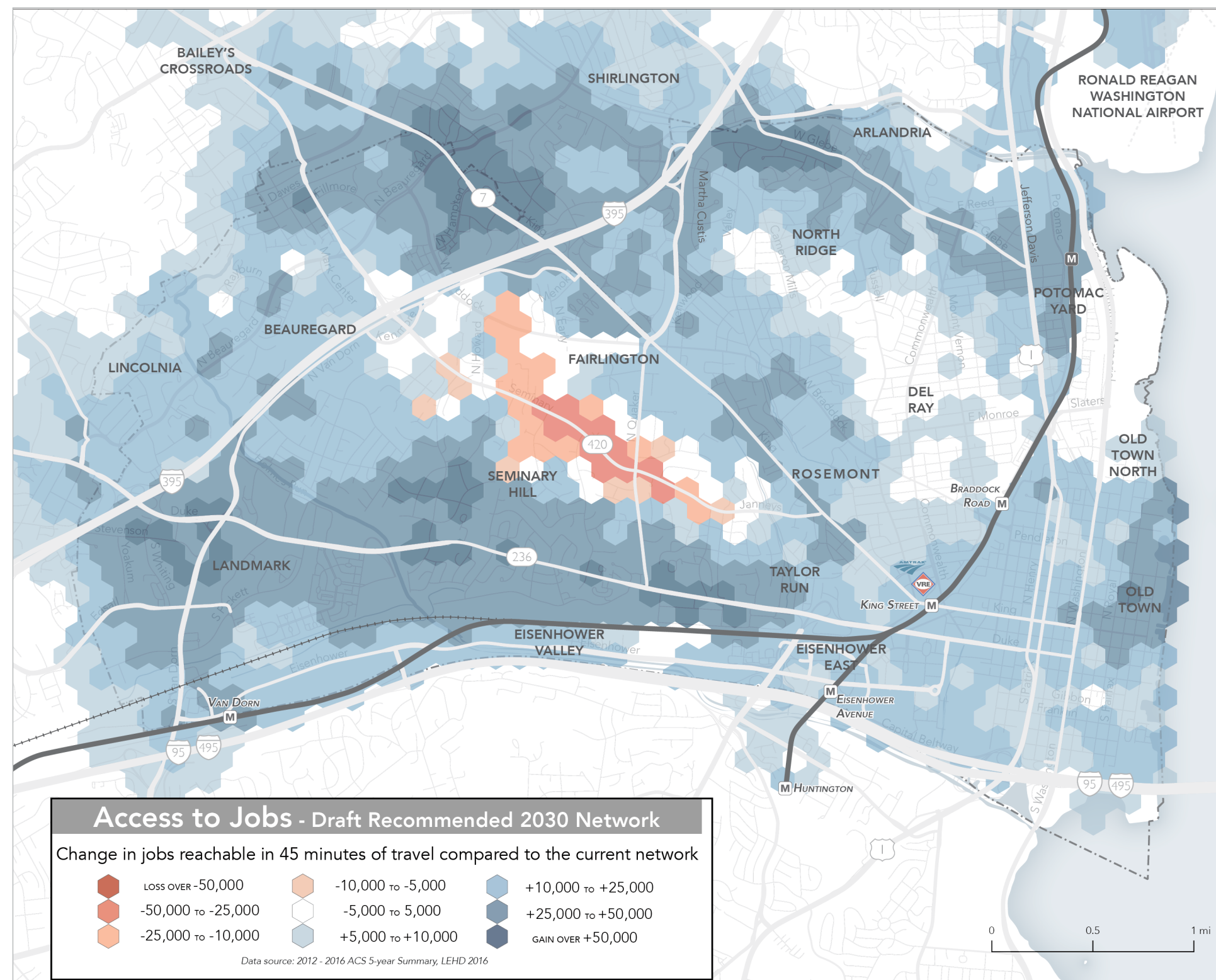
The map shows the change in the number of jobs someone can reach by walking and transit within 45 minutes at midday when comparing the Existing and Draft Recommended Networks.[1] Each hexagon on the map is shaded by the increase or decrease in jobs reached by walking and transit within 45 minutes from its center point. The results for this analysis would be better at peak times when frequency of service is higher and there are more routes running.

Most areas see increases in jobs access. A few areas see decreases in jobs access, for example, Braddock Road from Howard Street to King Street sees a decline because WMATA Route 28A has been shifted to Duke Street. Also, Seminary Road east of Howard Street and Janneys Lane see a decrease because service has been removed from this part of the city. The areas that see decreases in access to jobs are generally low density, and thus relatively few residents would experience a decrease in job access.

The average Alexandrian would see their access to jobs increase by 18% with the Recommended Network, increasing by about 3,700 the number of jobs they could reach within 45 minutes.

> For the average Alexandrian, the Recommended Network would increase the number of jobs accessible within 45 minutes by 18%—an additional 3,700 jobs.

Figure 22: Change in Midday Access to Jobs within 45 Minutes - 2030 Recommended Network Compared to Existing Network

Access to Jobs - Draft Recommended 2030 Network

Change in jobs reachable in 45 minutes of travel compared to the current network

LOSS OVER -50,000	-10,000 TO -5,000	+10,000 TO +25,000
-50,000 TO -25,000	-5,000 TO 5,000	+25,000 TO +50,000
-25,000 TO -10,000	+5,000 TO +10,000	GAIN OVER +50,000

Data source: 2012 - 2016 ACS 5-year Summary, LEHD 2016

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[1] Isochrones were calculated at 30 minutes because the smaller areas are easier to discern differences in access within the relatively small geography of Alexandria. This overall access analysis was completed at 45 minutes because the average work commute by transit for residents of Alexandria is about 45 minutes and it provides a clearer estimate of the range of change in jobs and opportunities that would be possible to reach with a larger travel budget.

2022 Draft Recommended Network

The map to the right (Figure 23) shows the weekday, midday frequency of the Draft Recommended Network for 2022. This network was designed as a step toward development of the 2030 Draft Recommended Network. This network assumes that the City invests more in transit so that DASH can increase service by 8% over the existing service levels and that the 395 Commuter Choice program continues funding additional service in western Alexandria.

2022 Network Service Improvements

The 2022 Network begins implementing key changes in the transit network by consolidating different patterns of service in western Alexandria. Instead of three different patterns of service along Beauregard with Routes AT1, AT2, and WMATA Route 7, the 2022 Network provides a more frequent Route N7 on one pattern from Van Dorn Metro through Lincolnia, Mark Center, Southern Towers, North Fairlington, Shirlington and on to Pentagon.

The 2022 Network also consolidates service on King Street into one frequent route (N4) from Old Town to Northern Virginia Community College.

Similar to the 2030 Network, this network removes service from some low density places like eastern Seminary and Janneys Lane and North Ridge. In the 2022 Network there is no new investment for WMATA service, so the changes to the 22A in the 2030 Network that would mitigate the loss of the AT3/4 loop to eastern Braddock Road are not included in this network.

The Old Town Circulator shown in the 2030 network is also implemented. In the 2022 network, the Old Town Circulator would be created by combining Routes N1, N3, and N4 (the Eisenhower, Duke, and King routes). For more details on the Old Town Circulator, see page 36.

Figure 23: Recommended Network by 2022, <u>Midday Weekday Frequency</u>

Any changes to routes outside of Alexandria will be coordinated with the appropriate jurisdiction and WMATA (where applicable).

Existing Arlington Transit (ART) routes are assumed to remain the same.

Location of temporary Landmark Transit Center to be determined during construction.

Alexandria Transit Vision
2022 Midday Network

Midday Frequency
- OTC — 10 min or better
- 7M — 15 min
- 28A — 20 min
- 10B — 30 min

- M — Metrorail line + station
- MWY — Metroway
- OTC — Old Town Circulator

- To Pentagon Station
- Office/Mixed Use
- Residential Complex
- Retail Center
- Educational Institution

Note: This map only shows routing that operate all-day. For peak-only routes, see 2022 Peak Network map.

*KST is the extended King Street Trolley.

**OTC -Old Town Circulator- is a combination of routes N1, N3, and N4. Anyone on these routes can ride through the King St. Metro into Old Town without transferring.

Existing Fairfax Connector routes are assumed to remain the same.

0   0.5   1 mi

2022 Peak Network

The 2022 peak network keeps most of the existing peak-only service with some adjustments to account for changes in the all day network.

» WMATA Peak-Only Routes 7C/P/Y/W, 8W/Z, 11Y, 21A/D,22C/F, 28F/G are unchanged from the existing network.

» 10E continues to serve Hunting Point to Pentagon but follows the 10A/B alignment instead of deviating to serve Powhatan Street, as it does today.

» Some existing DASH Peak-Only routes remain with some changes and the numbers have changed:

  » AT2X is called N22 and runs non-stop from King Street Metro to Mark Center. Currently, the AT2X is funded by the Department of Defense (DoD), which requires that the service be non-stop. If DoD were willing to allow this route (N22) to have intermediate stops, then buses could stop at Taylor Run Parkway, and Fort Williams Parkway to provide peak service to areas that otherwise would not have any service. Additional coordination with DoD staff would be required for any changes to this route.

  » AT3 is called N23 and runs from Braddock Road Metro to Pentagon via Russell Road and West Glebe Road, similar to the existing network except that it does not serve Old Town.

  » AT4 is called N24 and runs from Braddock Road Metro to Pentagon via Cameron Mills Road and Martha Custis Drive, similar to the existing network except that it does not serve Old Town.

In addition to the above, many routes have higher frequency at peak, including N1 on Eisenhower Avenue, N3 on Duke Street, N4 on King Street, and Metroway.

Figure 24: Recommended Network by 2022, _Peak Weekday Frequency_

Any changes to routes outside of Alexandria will be coordinated with the appropriate jurisdiction and WMATA (where applicable).

Existing Arlington Transit (ART) routes are assumed to remain the same.

Service continuing to Pentagon Station
Duke: 21A, 21D
Seminary: 7M, 7W, 8Z, 8W
King: 28G
Shirlington: N7, 7P, 7Y, 22C, 22F
Parkfairfax: N23, N24

Location of temporary Landmark Transit Center to be determined during construction.

Alexandria Transit Vision
2022 Peak Network

Peak Frequency
- OTC — 5 min or better
- N7 — 10 min
- 7M — 15 min
- 28A — 20 min
- 10B — 30 min

- M Metrorail line + station
- MWY Metroway
- OTC Old Town Circulator
- – – – Express Service

- To Pentagon Station
- Office/Mixed Use
- Residential Complex
- Retail Center
- Educational Institution

*KST is the extended King Street Trolley.

**OTC -Old Town Circulator- is a combination of routes N1, N3, and N4. Anyone on these routes can ride through the King St. Metro into Old Town without transferring.

Existing Fairfax Connector routes are assumed to remain the same.

0   0.5   1 mi

2022 Span of Service

The chart to the right (Figure 25) shows the frequency of service by time of day and day of the week for the 2022 Draft Recommended Network. Looking at this chart, one can see that Route N3 would have 10-minute service from 6 am to 9 am and 4 pm to 7 pm on weekdays and 30-minute service from 7 am to 11 pm on weekends.

The 2022 Draft Recommended Network provides more evening frequency on Route N3, N4, N5, N6. This is a significant improvement in evening and weekend service for these corridors relative to the existing network, but is only affordable because of the assumed 8% increase in service for DASH.

Figure 25: Frequency/Span Chart for the 2022 Draft Recommended Network

Alexandria 2022 Network Route Frequencies

*The Old Town Circulator (OTC) is a combination of N1, N3, and N4 from King Street Station to Braddock Road.

**N7 runs every 7.5 minutes during peak times between Van Dorn and Southern Towers

***25b runs every 15 minutes during peak times between Ballston and Southern Towers

Span and Frequency of these routes is unchanged from existing. See recommended map for routings

JARRETT WALKER + ASSOCIATES

FREQUENCY: 5 min or better | 10 min or better | 15 min | 20 min | 30 min | 60 min | over 60

2022 Proximity Analysis

By simply comparing the maps on the previous pages, it is clear that the 2022 Draft Recommended Network covers a little less area than today's network. But that's not the whole story of how the networks cover the city. How many residents and jobs does that geographic coverage represent and how many have access to frequent service?

Figure 26 at right shows how the percent of residents who are within 1/4 mile of any transit service (no matter how frequent) and to frequent service (a bus or train arriving every 15 minutes at midday). Figure 27 shows the percent of jobs within 1/4 mile of any transit service and frequent service.

The Existing Network provides frequent service within 1/4 mile of about 27% of Alexandria residents. The 2022 Recommended Network increases this to 65% of residents. Part of the trade-off of this increase in frequent service is that the percent of residents near any transit (no matter how frequent) declines from about 97% in the Existing Network to about 95% in the 2022 Recommended Network.

Proximity to jobs shows a similar pattern. The Existing Network provides frequent service to 40% of jobs and the 2022 Recommended Network increases this to 66%. The percent of jobs near any service stays roughly the same at 90%, but slightly more jobs are only reachable by peak-only service, 2% in the 2022 Recommended Network instead of 1% in the Existing Network.

Access to frequent service is a good estimate of potential ridership. While frequency alone is not enough to cause high ridership, frequency deployed along direct routes, in places that are dense, walkable and proximate to one other, does tend to lead to high ridership and lower operating costs, and thus to high productivity.

The 2022 Recommended Network brings 65% of residents and 66% of jobs within 1/4 mile of frequent transit.

Figure 26: Residents near Transit on Weekdays, Existing and 2022 Networks

Residents near Transit on Weekdays
**within 1/4 mile of a bus stop in Alexandria, Virginia**
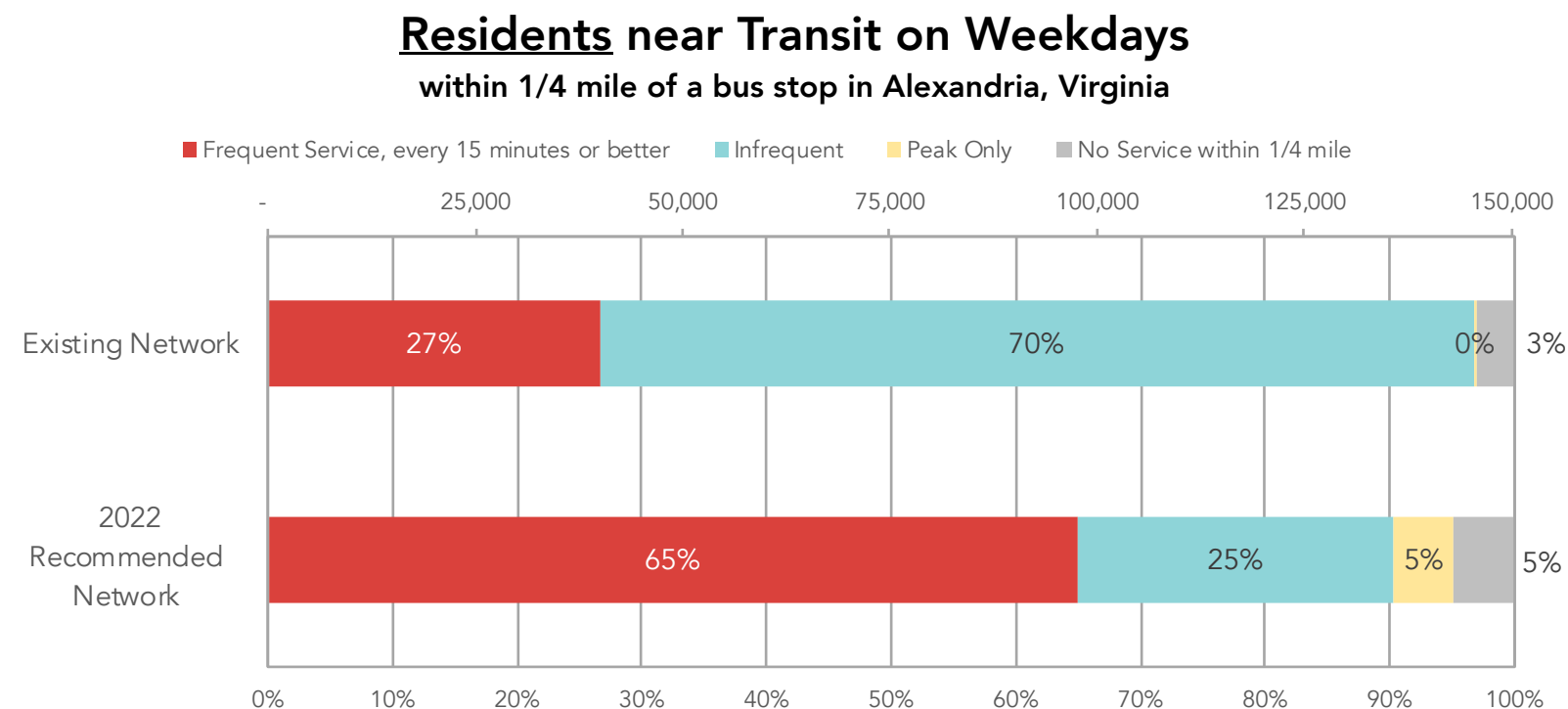
Figure 27: Jobs near Transit on Weekdays, Existing and 2022 Networks

Jobs near Transit on Weekdays
within 1/4 mile of a bus stop in Alexandria, Virginia
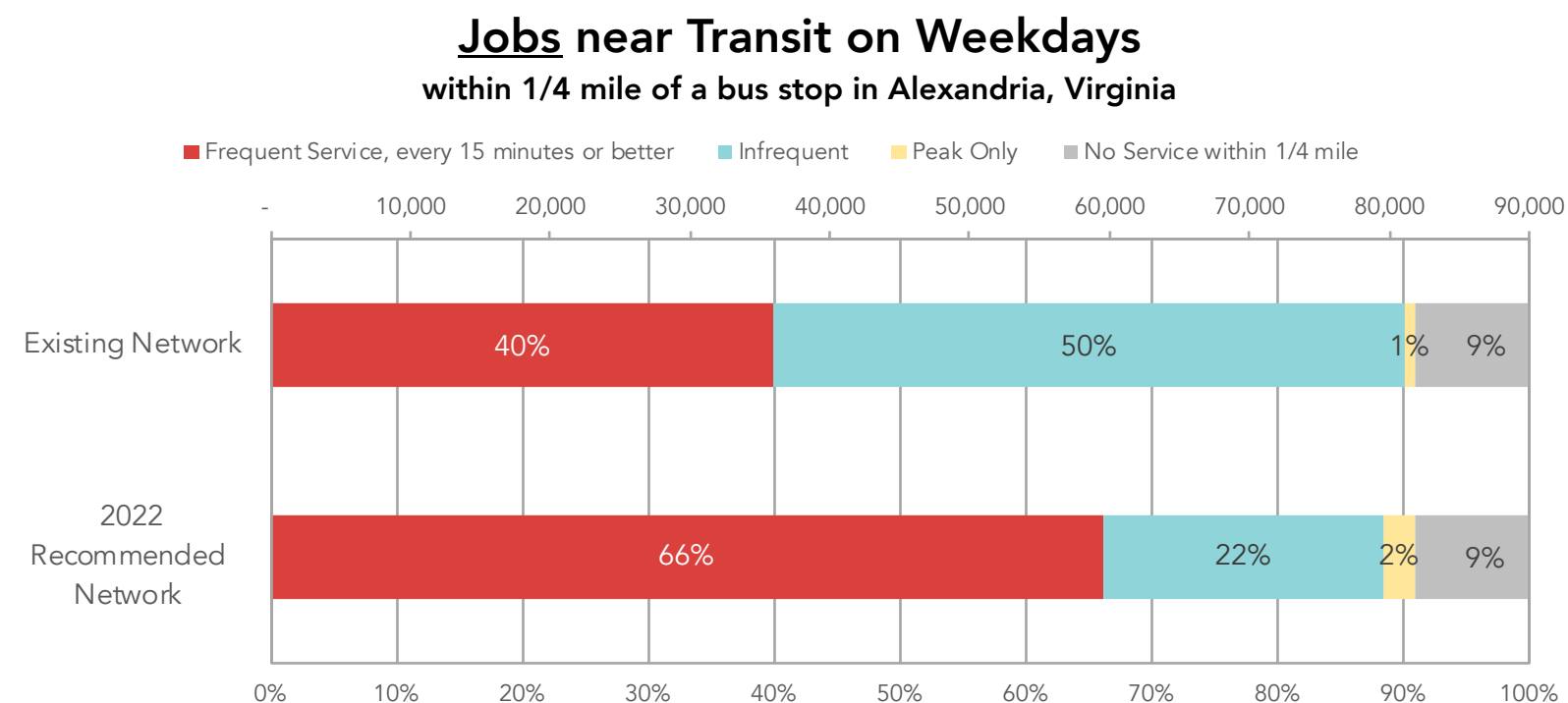
Proximity for Communities of Concern

Figure 28 shows the differences in proximity to service for residents of color, residents in poverty, and senior residents for the Existing Network and 2022 Recommended Network. These charts illustrate how many residents in each of these groups are near frequent service (every 15 minutes or better), infrequent service, peak-only service, or not near any service under the Draft Recommended Network and the Existing Network.

In each case, the number and percent of people near frequent service goes up dramatically. In the Existing Network, only 22% of residents of color are near—within 1/4 mile—frequent service, while in 2022 that would increase to 70%—higher than for residents overall. Residents in poverty see a similar dramatic increase in access to frequent service. As with all residents, there is a small increase in the percent of residents of color and residents in poverty who are more than 1/4 mile from service, but that increase is of similar or smaller magnitude than for all residents.

For seniors, the increase in the percent near frequent service is a little less than it is for all residents. The increase in the percent of seniors who are more than 1/4 mile from any service is about the same as it is for all residents.

Figure 28: Residents of Color, Residents in Poverty, and Seniors near Transit, Existing and 2022 Networks

Residents of Color near Transit on Weekdays
within 1/4 mile of a bus stop in Alexandria, Virginia
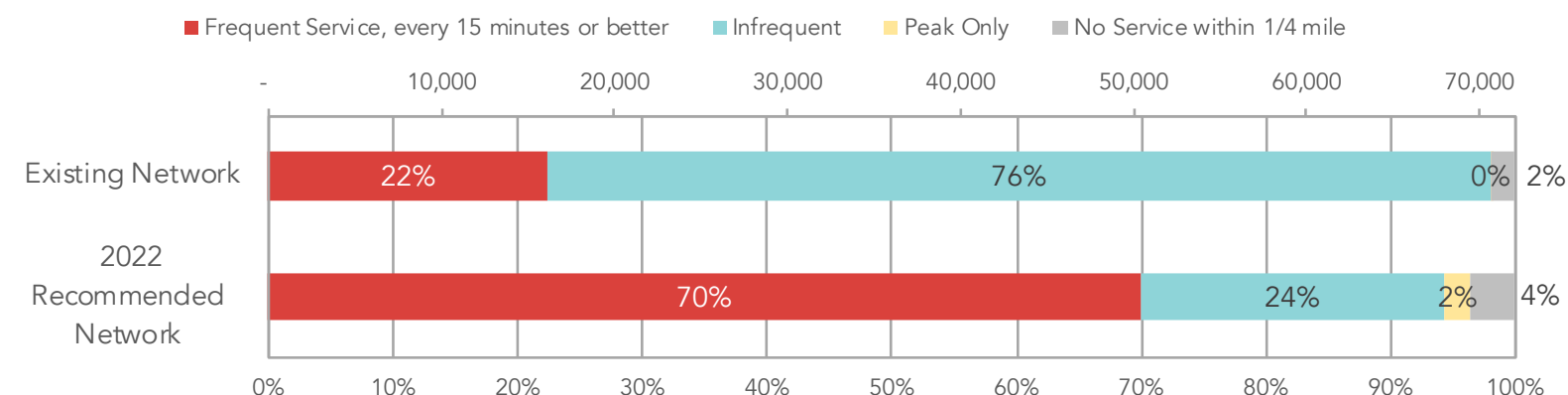
Residents in Poverty near Transit on Weekdays
within 1/4 mile of a bus stop in Alexandria, Virginia
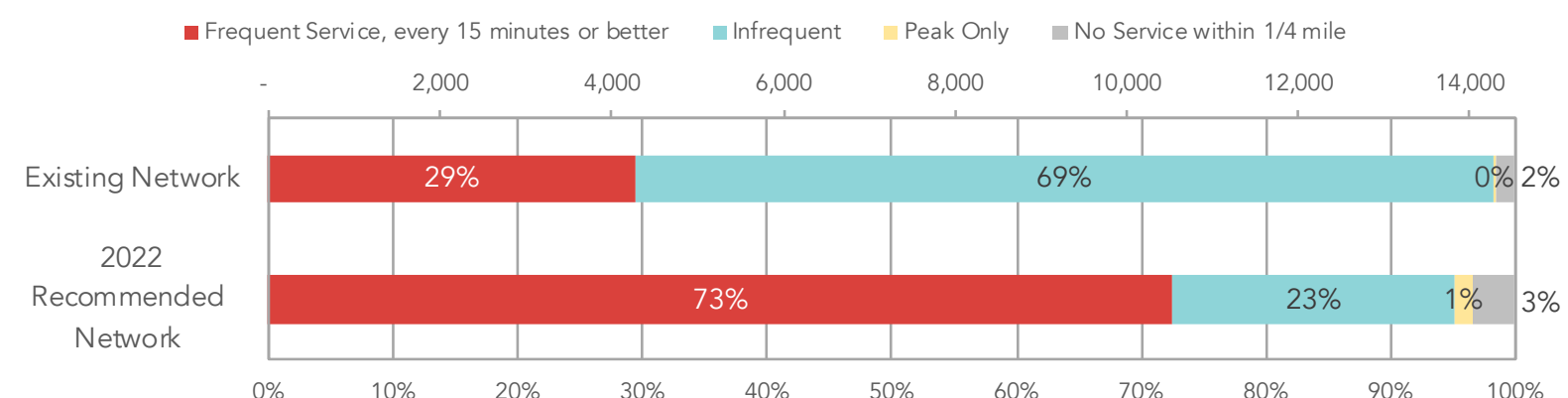
Seniors near Transit on Weekdays
within 1/4 mile of a bus stop in Alexandria, Virginia
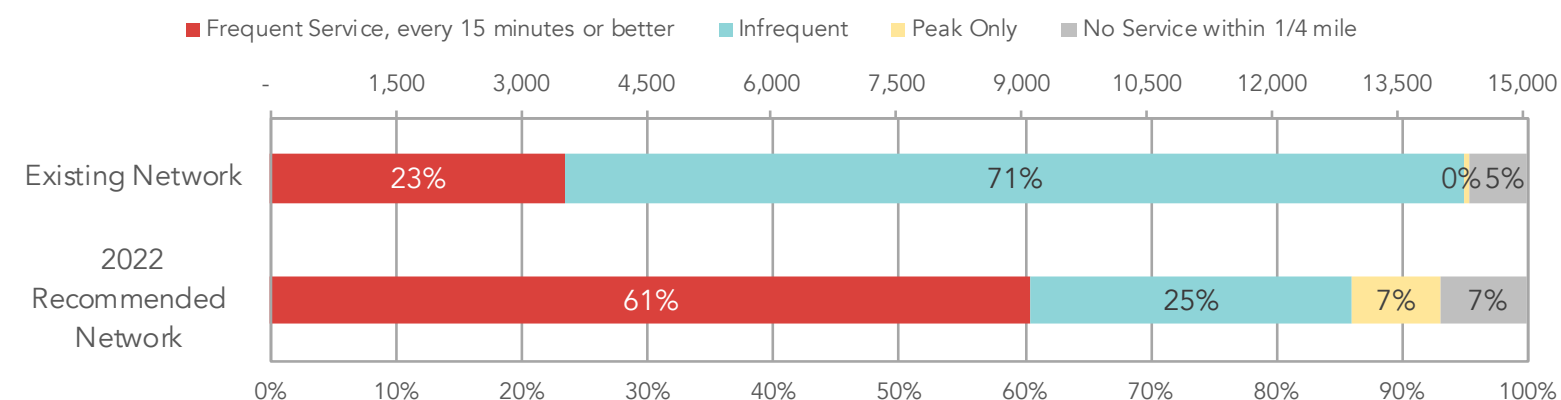
2022 Access to Jobs

Like the isochrone analysis of the 2030 network, we can assess the effects of the 2022 network by counting the number of jobs accessible for all parts of the city. Job access is an indicator of both the work opportunities that can be reached by transit, and the businesses and services customers or clients could choose to travel to.

The map to the right (Figure 29) shows the change in the number of jobs someone can reach by walking and transit within 45 minutes at midday when comparing the Existing and Draft Recommended Networks. Each hexagon on the map is shaded by the increase or decrease in jobs reached by walking and transit within 45 minutes from its center point. The results for this analysis would be better at peak times when frequency of service is higher and there are more routes running.

> For the average Alexandrian, the 2022 Recommended Network would increase the number of jobs accessible within 45 minutes by 13%—an additional 2,700 jobs.

Most areas see increases in jobs access. A few areas see decreases in jobs access. For example, Braddock Road from Howard Street to King Street sees a decline because WMATA Route 28A has been shifted to Duke Street. Also, Seminary Road east of Howard Street and Janneys Lane see a decrease because service has been removed from this part of the city. The areas that see decreases in access to jobs are generally low density, and thus relatively few residents would experience a decrease in job access.

Appendix C has 15 isochrone examples for locations around the city showing how access changes in the 2022 Recommended Network compared to today's network.

Figure 29: Change in Midday Access to Jobs within 45 Minutes - 2022 Recommended Network Compared to Existing Network

Access to Jobs - Draft Recommended 2022 Network

Change in jobs reachable in 45 minutes of travel compared to the current network

- LOSS OVER -50,000
- -50,000 TO -25,000
- -25,000 TO -10,000
- -10,000 TO -5,000
- -5,000 TO 5,000
- +5,000 TO +10,000
- +10,000 TO +25,000
- +25,000 TO +50,000
- GAIN OVER +50,000

Data source: 2012 - 2016 ACS 5-year Summary, LEHD 2016
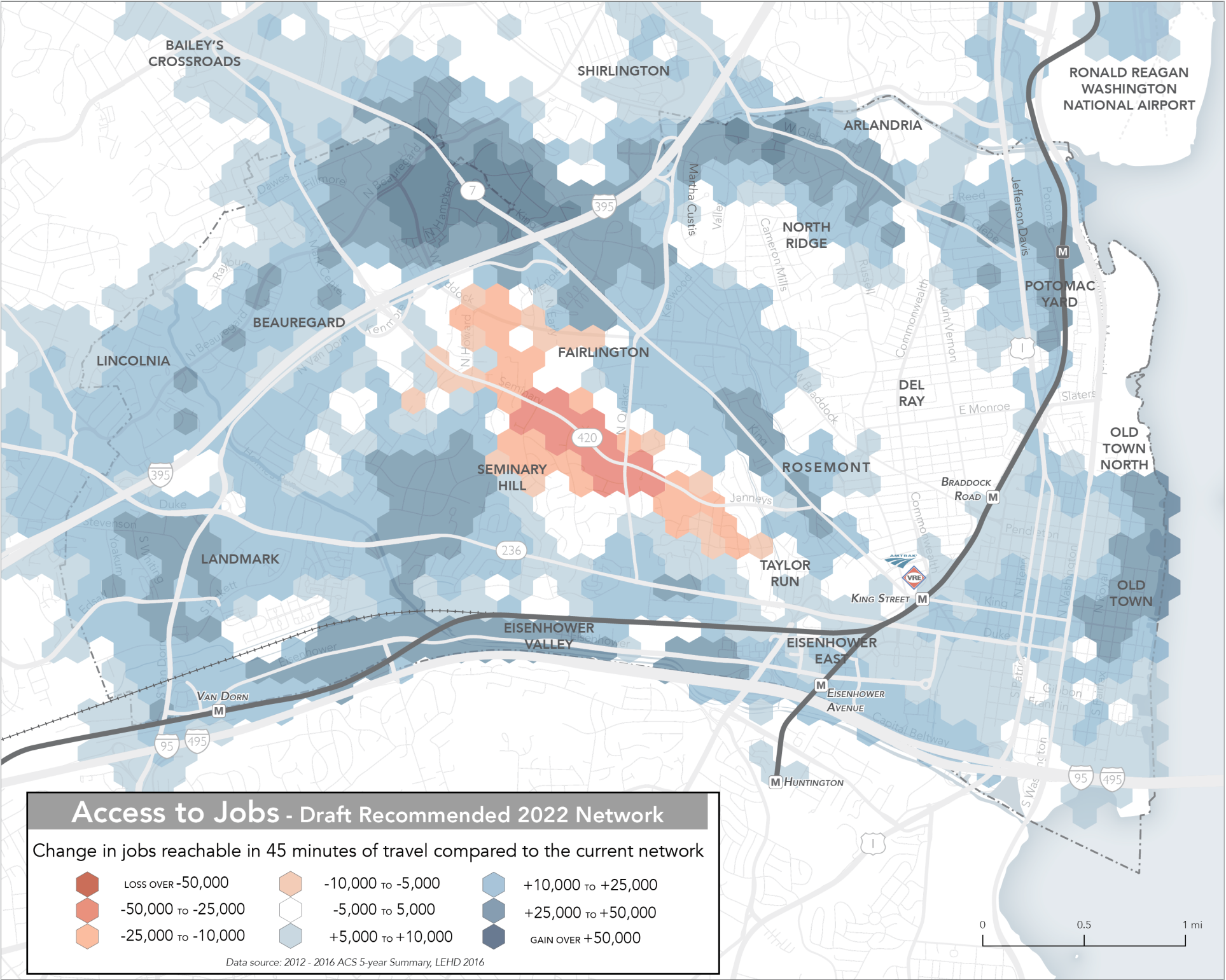
2022 No Growth Scenario

When the DASH Board provided its policy direction (see page 6), one scenario requested was a short-term option that did not require additional funding, in other words a "Zero Growth" scenario. In designing the 2022 Recommended Network, the study team found that it would be possible to design the same midday weekday network under a "No Growth" scenario but that evening and weekend service levels would have to be reduced to keep within a "No Growth" budget.

Major differences compared to the 2022 Recommended Network include:

» On weekdays, N3, N4, N5, and N6 drop to hourly frequency earlier in the evening, at 8pm or 9pm, and N5 and N6 end earlier.

» On Saturdays, N4 and N7 are every 30 minutes, instead of providing every 15 minute service.

» On Sundays N4, N7, and the King Street Trolley are every 30 minutes, instead of providing every 15 minute service.

» On Sundays, N1, N5, N6, N10, and N11 are hourly, instead of every 30 minutes.

The higher level of evening and weekend service provided in the 2022 Recommended Network is only affordable because the study team assumed, per policy direction from the DASH Board, that the City of Alexandria would invest more in DASH service, increasing service hours by 8% compared to the Existing Network.

Figure 30 shows the span of service for routes in the 2022 Network Map if there were no additional investment in service, in other words a "Zero Growth" scenario. Many routes would have much lower frequencies in the evening and on Sundays, making waiting times much longer, connections between routes much harder, and reducing the usefulness of transit.

Maps on the following pages show comparisons of the networks (Existing, 2022 No Growth, 2022 Growth, and 2030 Recommended) on Weekday Evenings, Saturdays at midday, and Sundays at midday. These maps and charts make clear the enormous improvement in usefulness of evening and weekend transit service that is included in the 2022 and 2030 Networks.

Figure 30: Frequency/Span Chart for the No Growth 2022 Network
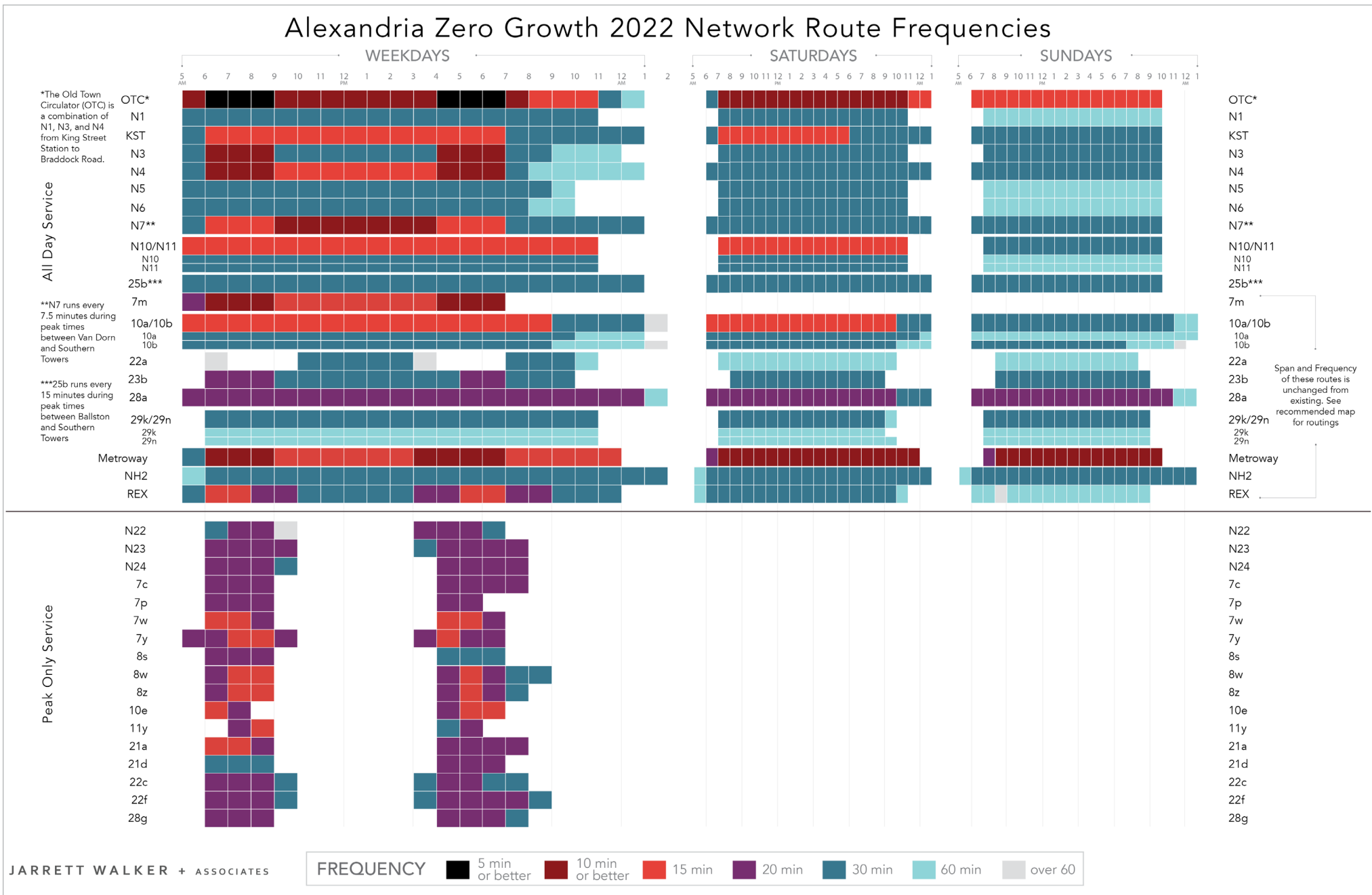
These improvements are only possible with additional investment in service by the City.

Network Frequency and Proximity to Service on Weekday Evenings (9pm)

The miniature network maps below show the overall pattern of the network at 9pm on weekdays, in the same color scheme as the main network maps shown previously. Notice the overall pattern difference in how many red lines (routes with 15 minute or better frequency) compared to blue and light blue lines.

The charts below show the percent of residents and jobs near frequent transit or any transit service. Notice how the percent of residents and jobs near frequent service is much higher in the 2022 8% Growth and 2030 networks. While there is no difference in the percent of residents and jobs near frequent service between 2022 0% Growth

and 2022 8% Growth, there is still some improvement in service, because more routes are running every 30 minutes, instead of every 60 minutes. Specifically, Route N3, N4, N5, and N6 are more frequent at 9pm in the 2022 8% Growth Network.

Existing Network	2022 0% Growth	2022 8% Growth	2030 Recommended

How many residents are near . . .

■ Frequent Service, every 15 minutes or better   ■ Any Service

	Existing	2022 0%	2022 8%	2030
Frequent Service	12%	29%	29%	71%
Any Service	95%	90%	90%	91%

How many jobs are near . . .

■ Frequent Service, every 15 minutes or better   ■ Any Service

	Existing	2022 0%	2022 8%	2030
Frequent Service	30%	44%	44%	72%
Any Service	89%	88%	88%	89%

Figure 31: Maps and Charts Contrasting Evening Service in the Existing, 2022 No Growth, 2022 Growth, and 2030 Recommended Networks

Near service means within 1/4 mile of a bus stop or transit station. The jobs and population numbers are for existing population and jobs as of 2017 Census estimates.

Network Frequency and Proximity to Service on Saturday (12pm)

The miniature network maps below show the overall pattern of the network at **noon on Saturdays**, in the same color scheme as the main network maps shown previously. Notice the overall pattern difference in how many red lines (routes with 15 minute or better frequency) compared to blue and light blue lines.

The charts below show the percent of residents and jobs near frequent transit or any transit service. Notice how the percent of residents and jobs near frequent service is much higher in the 2022 and 2030 networks. For example, in the 2022 0% Growth network, the percent of residents near frequent service increases from 24% to 36%

Existing Network	2022 0% Growth	2022 8% Growth	2030 Recommended

How many residents are near . . .

■ Frequent Service, every 15 minutes or better   ■ Any Service

	Existing	2022 0%	2022 8%	2030
Frequent Service	24%	36%	65%	79%
Any Service	94%	90%	90%	91%

How many jobs are near . . .

■ Frequent Service, every 15 minutes or better   ■ Any Service

	Existing	2022 0%	2022 8%	2030
Frequent Service	37%	50%	66%	75%
Any Service	85%	88%	88%	89%

Figure 32: Maps and Charts Contrasting Saturday Service in the Existing, 2022 No Growth, 2022 Growth, and 2030 Recommended Networks

Near service means within 1/4 mile of a bus stop or transit station. The jobs and population numbers are for existing population and jobs as of 2017 Census estimates.

Network Frequency and Proximity to Service on Sunday (12pm)

The miniature network maps below show the overall pattern of the network at **noon on Sundays**, in the same color scheme as the main network maps shown previously. Notice the overall pattern difference in how many red lines (routes with 15 minute or better frequency) compared to blue and light blue lines.

The charts below show the percent of residents and jobs near frequent transit or any transit service. Notice how the percent of residents and jobs near frequent service is much higher in the 2022 and 2030 networks. For example, in the 2022 8% Growth network, the percent of residents near frequent service increases from 12% to 59%

| **Existing Network** | **2022 0% Growth** | **2022 8% Growth** | **2030 Recommended** |

How many residents are near . . .

🟥 Frequent Service, every 15 minutes or better 🟦 Any Service

	Existing	2022 0%	2022 8%	2030
Frequent	12%	15%	59%	74%
Any	91%	90%	90%	91%

How many jobs are near . . .

🟥 Frequent Service, every 15 minutes or better 🟦 Any Service

	Existing	2022 0%	2022 8%	2030
Frequent	30%	42%	64%	73%
Any	84%	88%	88%	89%
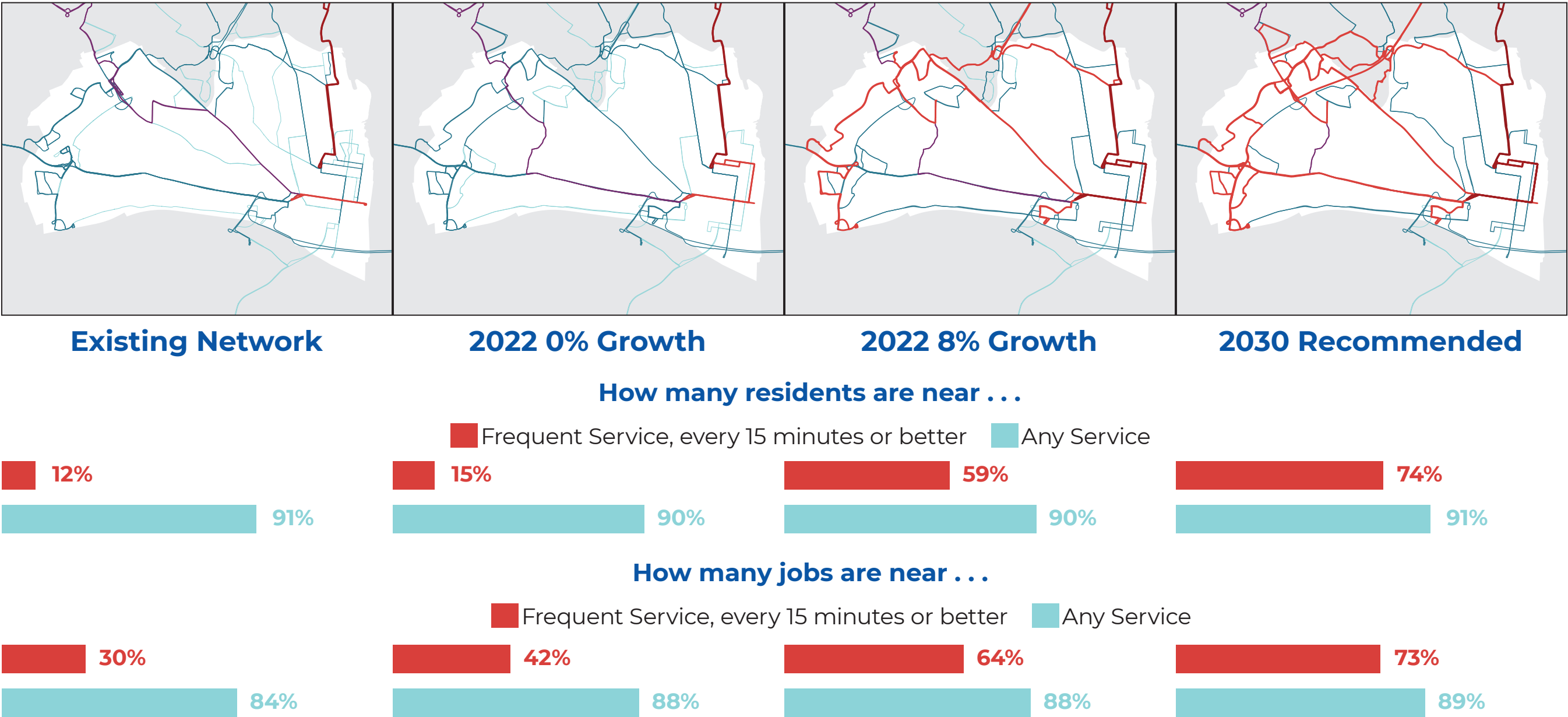
Figure 33: Maps and Charts Contrasting Sunday Service in the Existing, 2022 No Growth, 2022 Growth, and 2030 Recommended Networks

Near service means within 1/4 mile of a bus stop or transit station. The jobs and population numbers are for existing population and jobs as of 2017 Census estimates.

Old Town Service

The existing bus network in Old Town spreads service across parallel streets such as King Street and Duke Street that result in service that is less frequent and poorly coordinated so that buses end up running on top of one another. One of the goals of the Recommended Networks is to reorganize service in Old Town so that overlapping routes may be better coordinated with more frequent service for riders getting around within Old Town and coming into and out of Old Town. Figure 34 shows the differences in the design of the network in Old Town in the Existing Network and the 2030 Recommended Network.

The new "Old Town Circulator" would connect the King Street Metro Station to the Braddock Road Metro Station via King, Fairfax, and Madison/ Montgomery Streets every 7 to 8 minutes all-day.

In 2030, the Old Town Circulator would be composed of two routes (N3 and N4) that feed into the King Street Metro Station. This allows anyone riding on the N3 or N4 to go into or out of Old Town without needing to transfer at the King Street Metro Station. The 2022 network has a slightly different variation of this, with three routes (N1, N3, and N4) combining into the Old Town Circulator.

King Street Trolley

The King Street Trolley is a key part of tourism branding in Old Town. The current Trolley schedule starts running at 10:30am or 11:00am and connects the King Street Metro Station to the Waterfront every 10-15minutes. This limited span means that service is not available for morning commuters, early shift workers, and others coming into Old Town before 10:30am. The Trolley is currently funded by hotel tax revenues from hotels

across the entire city, though its current benefits are mostly confined to Old Town.

The 2030 and 2022 Recommended Networks include the King Street Trolley with a potential extension from the King Street Metro to the Eisenhower Metro Station via the Carlyle and Eisenhower East districts. This could provide a frequent connection directly between the large and dense activity center around Eisenhower Avenue Metro and Old Town. The revised King Street Trolley would also operate with more traditional operating hours, including morning service. It should noted, however, that due to the funding arrangement for the operation of the King Street Trolley, any potential changes to the Trolley would require coordination with City Council.

Figure 34: Existing Network (Left) and 2030 Recommended Network (Right) in Old Town
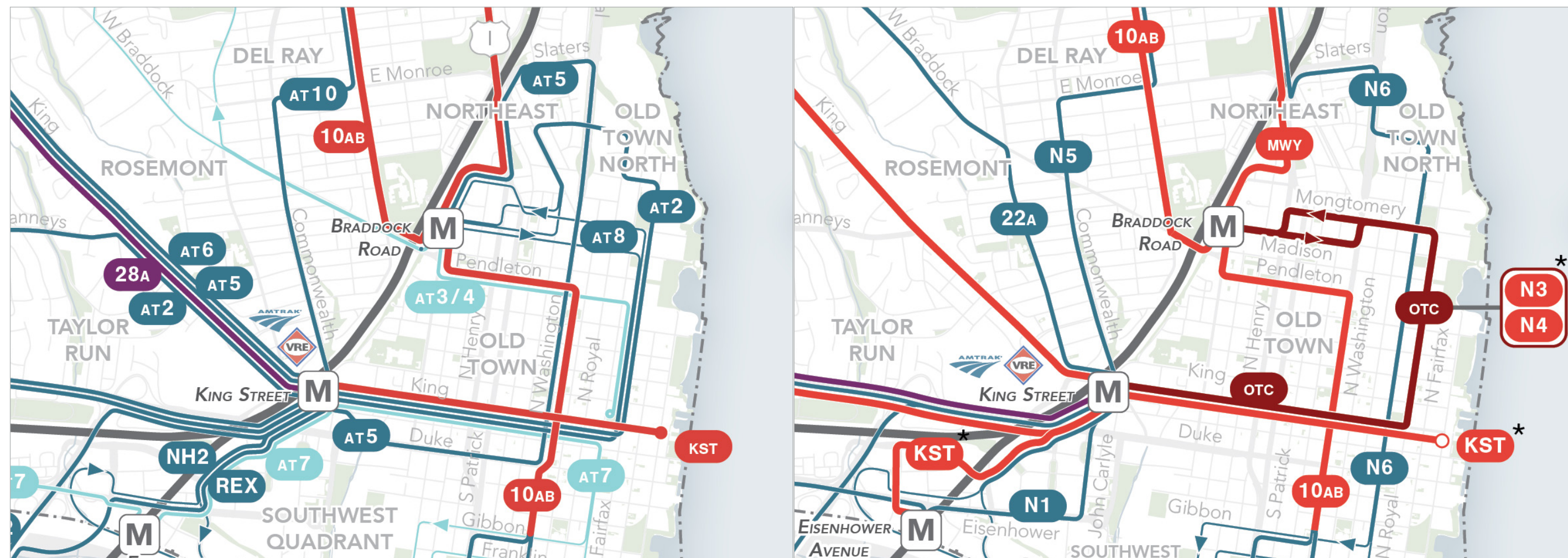
Alternative Old Town Network

The current King Street Trolley is paid for mostly through hotel tax receipts from hotels across the entire city. This raises an issue about the fairness of funding a free route in one part of the city that is paid for from hotel taxes across the entire city.

The extension of the existing King Street Trolley in both the 2022 and 2030 Networks, as described on the previous page, would be relatively easy to implement in the near term. It would not substantially change how the King Street Trolley route interconnects with the rest of the DASH Network. **If the City and DASH wished to further integrate the King Street services into the citywide bus network, to create a more cohesive and useful service design for Old Town and Alexandria as a whole, it is possible to combine the King Street Trolley route into the Old Town Circulator.**

Figure 35 shows how the King Street Trolley (KST) could been organized to be part of the Old Town Circulator, and run from Eisenhower East, through King Street Metro, to King Street and Fairfax and north to Braddock Road Metro. This design has a number of benefits:

» Increased frequency of the Old Town Circulator to every 5 minutes, meaning a bus is always coming very soon.

» Improved connectivity and access across more of Old Town, as frequency of service would be higher on King Street, Fairfax Street, and through Old Town North on Montgomery and Madison Streets.

» Simpler service patterns on King Street as there would be only one, very frequent route so riders would know they could catch any bus that comes down King Street to get to reach destinations on King Street or either Metro station.

This design means there would not be service at the current trolley stop at Waterfront. Since the City is considering changing this portion of King Street into a pedestrian-only street, this change may be necessary without any other changes to the transit network.

Fare Considerations

One key feature of the current King Street Trolley is that it is free. It is possible to make the entire Old Town Circulator free, including the trips on citywide routes like the N3 and N4, but it would require some new and different approaches to operating and explaining the

service. **It is important to note that the ATV does not make any specific recommendations for fare policy of the King Street Trolley or any related services.** Decisions about whether or how to charge fares on either the Old Town Circulator or the King Street Trolley are separable issues from the design of the routes and can be determined at a later time after further consultation and discussion with residents, businesses, other stakeholders, and City leaders.

If the alternative Old Town Network were implemented as shown in Figure 35, there are three primary options for handling fares on the Old Town Circulator:

1. Keep the King Street Trolley free, and continue to charge fares for the other trips on other routes that are part of the Old Town Circulator, such as N3.

2. Allow everyone to ride free on the Old Town Circulator portion of the route between King Street Metro and Braddock Road Metro, similar to "Fare Free Zones" in other cities.

3. Require all riders to pay, but provide day passes to hotels around the city and retail businesses in Old Town to provide to customers. Additionally, DASH could provide day passes through special promotional options on its mobile app that could be distributed by Visit Alexandria and other tourism promoters.

The first option would keep the existing fare structure, but would disrupt the continuity of the Old Town Circulator. Instead of just catching any of the buses that arrive every five minutes, many riders would wait for the free trolley that only arrives every 15 minutes. This would undermine the usefulness of the Old Town Circulator, and would also result in many more boardings on the King Street Trolley compared to Routes N3 and N4. This would make it difficult to keep trips evenly spaced for consistent service every five minutes.

The second "Fare Free Zone" option would encourage transit use in Old Town, expand the usefulness of the free service, and solve the problem of unbalanced boardings between buses by making all trips on the Old Town Circulator free. The "Fare Free Zone" would likely have an impact on revenues and possible equity concerns for providing free transit service for a relatively affluent part of the city.

The third option would require fares on all routes but includes the provision of free passes to Visit Alexandria for all Alexandria hotels and other tourism entities. It would require closer coordination between DASH and tourism operators. New fare options, such as the DASH Bus mobile app, make it easier to distribute free or discounted transit passes to community partners. This approach might also be more equitable for hotels and tourism operators outside of Old Town who help fund the existing Trolley. This approaches provides a more direct benefit since the free passes would be valid on all DASH routes in the citywide, higher frequency network.

As noted previously, the Alexandria Transit Vision is not recommending a fare policy for the King Street Trolley, as this is outside the scope of the plan. The scenarios outlined above provide options to improve the design and cohesiveness of the Old Town network for future consideration by City leadership.

Figure 35: Alternative Design of Service in Old Town
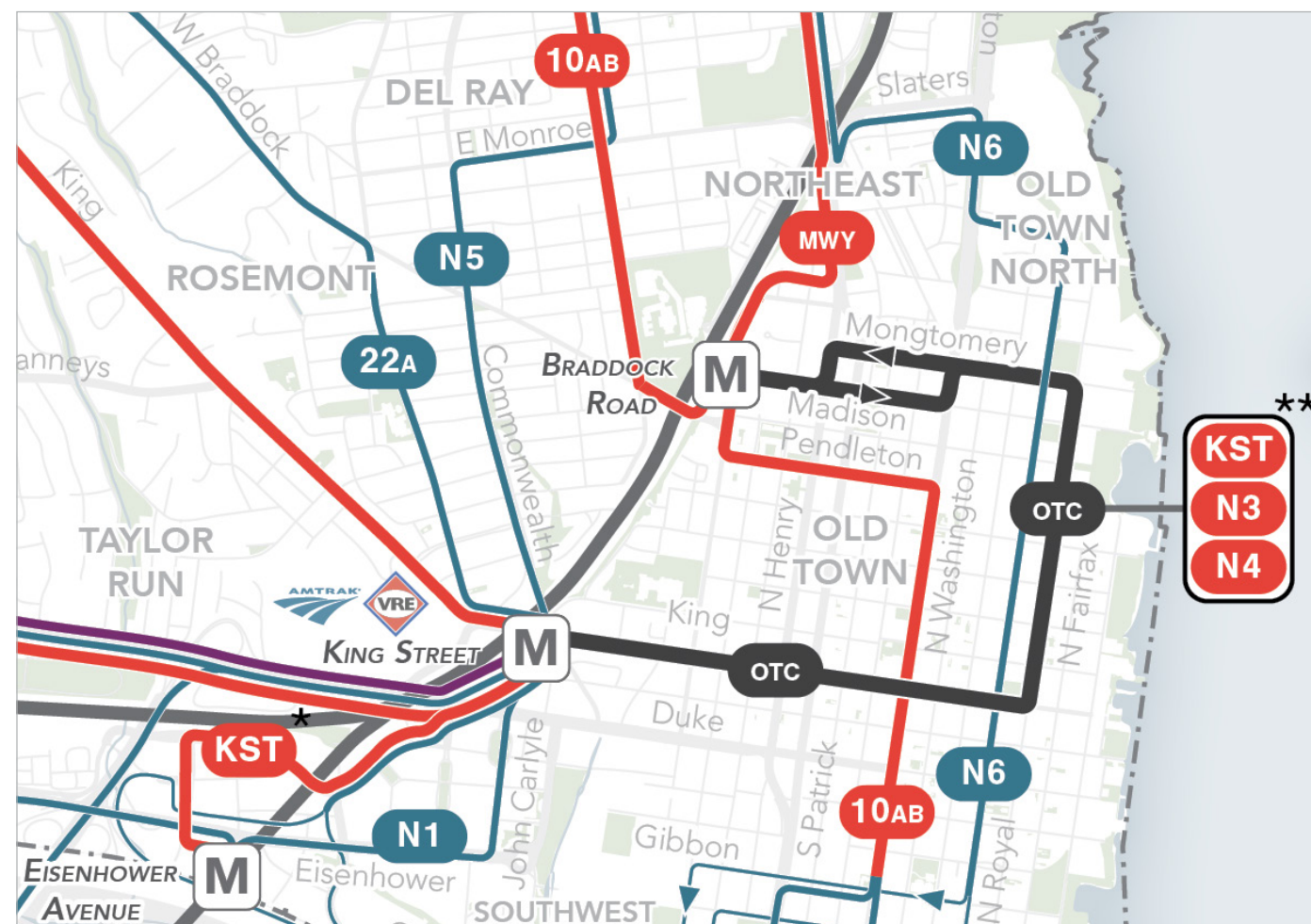
Connection Facilities

Both the 2022 and 2030 networks are designed with the assumption that appropriate facilities will be available at the key connection points between buses and between buses and Metrorail.

The connectivity between routes in western Alexandria is critical to improved access across the city and the region in the new networks. Therefore, improved facilities, particularly at Southern Towers, are essential to providing for adequate shelter for riders and reasonable bathroom and other facilities for bus operators who begin or end their route there.

Figure 36 shows the peak networks in 2022 and 2030 in the area of Southern Towers and Mark Center. In both Recommended Networks, Southern Towers becomes a more important connection point between many routes. To ensure sufficient space at Southern Towers for all of these routes to meet effectively, eight bus bays would be needed at the planned transit center. In Fiscal Year 2017, the City of Alexandria applied for and was awarded a $10 million grant for West End Transitway improvements within the Southern Towers site. Planning work is ongoing under this grant to determine the appropriate design of a facility, and this network design will inform that process going forward.

Improving Walk Access

The most efficient way for most people to access transit is to walk, or use their mobility device (e.g. wheelchair), to get from their origin to the bus stop and from their bus stop to their destination. Yet, not all parts of Alexandria are equally well connected with sidewalks, curb ramps, or safe crosswalks. Some parts of the city have street networks that are not well connected, leading to long walks to or from major streets, like King and Duke Streets.

A key priority for the city in its capital budgeting should be to improve walk access to frequent transit corridors in these networks, so that more and more people who already live in the city can access these more frequent transit lines more easily. Key areas for improvement include safe crossings at least every 1/4 mile and new pedestrian connections in areas with disconnected street networks.

Figure 36: 2022 and 2030 Recommended Peak Network Connections at Mark Center and Southern Towers
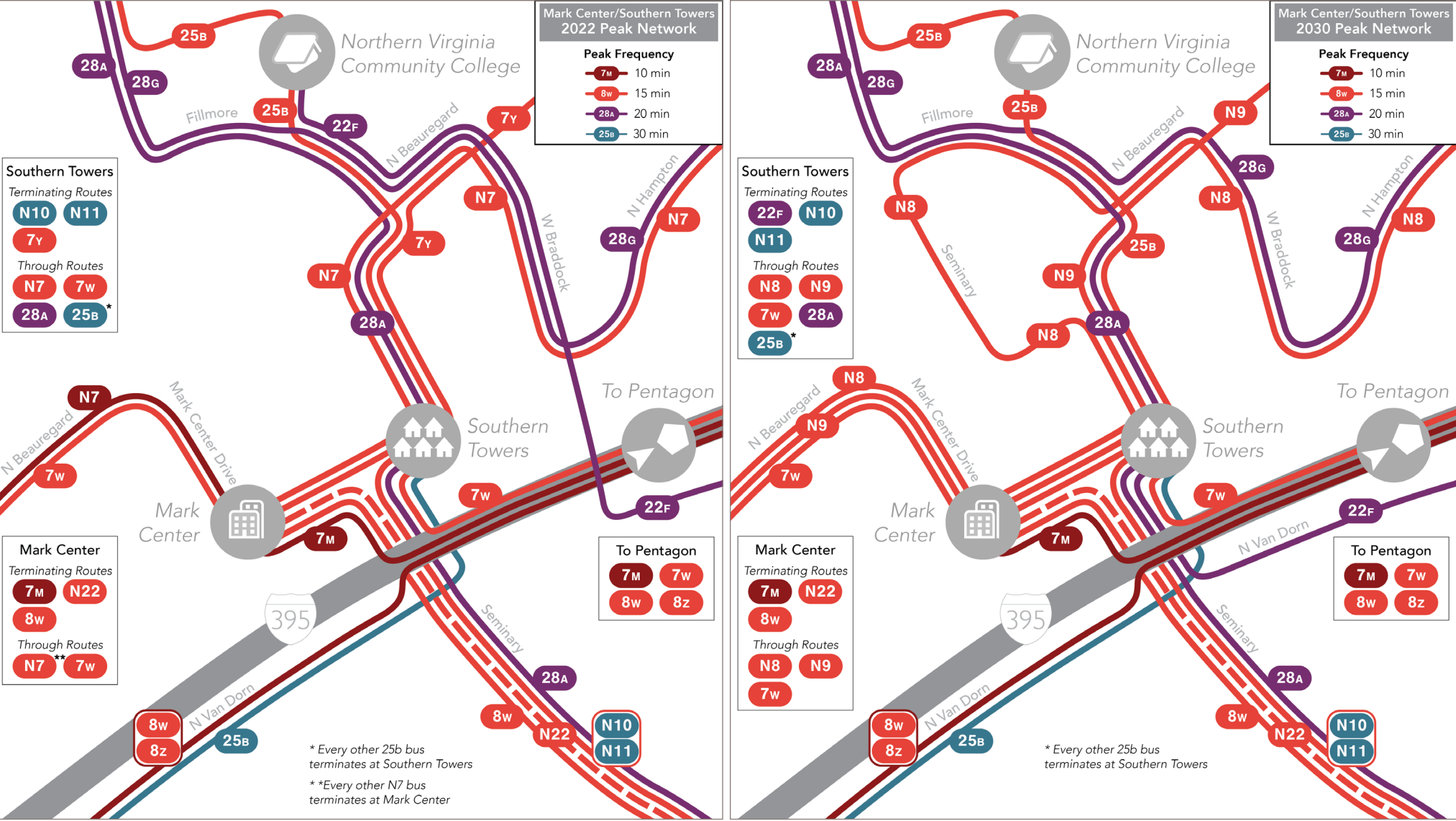
Bus Operator

In the eyes of the user, who operates a transit route is usually not a top priority. A user cares how often a bus is coming and if the transit network can take them to more destinations sooner. That is why the Draft Recommended Networks have been designed mostly as operator-neutral routes. It is likely that WMATA would continue to operate routes like the 28A that span long distances across multiple jurisdictions. Other routes, like the N8 and N9 could reasonably be operated by either DASH or WMATA.

The presumption in designing these networks is that any operator could run any route in the network. In doing so, these routes have been designed in ways that maximize the liberty and opportunity for existing and potential riders. DASH, WMATA, and other operators like ART and Fairfax Connector will need to work closely together as the future transit network is implemented because some routes and corridors that have traditionally been served by WMATA might be better served by DASH or another operator and vice versa. This network has been developed to get more people to more places sooner, but it is only possible when agencies and local jurisdictions coordinate to create the most liberating transit networks, regardless of the operator.

Capital Improvements

In addition to the improvements needed for Southern Towers, there are other key transfer stations that will require improvement or expansion to accommodate the 2022 and 2030 Recommended Networks. Figure 37 shows the comparison of existing and needed bus bays at key facilities. Key transit center improvements and specific needs at certain facilities include the following:

» **Eisenhower Avenue Metro:** The bus bay numbers shown in Figure 37 assume that there are two on-street bays on adjacent streets, which should not require expansion of the bus loops.

» **King Street Metrorail Station:** Currently, the bus loop at King Street Metro is being expanded to provide 10 bus bays. To accommodate the Old Town Circulator for trips going into Old Town, there will need to be two bus bays on northbound Diagonal Street across from the main bus loop. This is to ensure that there is one branded stop for that service that would be easy for visitors to find the service. With two bays on Diagonal Street, there should not be a need to reconfigure the new bus loop facility that is currently under construction.

» **Braddock Road Metro:** provision of bus bays, shelters, and other amenities on Braddock Road just west of West Street so that Metrobus Route 10A/B can stop on-street passing the station instead of turning through the station bus loop. This would save significant time for riders passing through this station.

Figure 37: Table of Bus Bays Needed at Key Stations

Facility	Existing Bays (2019)	Bays Needed for 2022 Network	Bays Needed for 2030 Network
Van Dorn Metro	6	7	8
Eisenhower Metro	8	4	4
King Street Metro	7	12	12
Braddock Road Metro	7	7	7
Potomac Yard Metro	0	6	6
Mark Center	6	8	8
Southern Towers	0	6	8
Landmark Mall	1	6	6
Shirlington	7	8	10
NVCC-Alexandria	1	1	1

» **Potomac Yard Metrorail Station:** 6 bus bays and sufficient layover facilities for bus operators will be needed to accommodate the buses terminating and stopping there. Particular attention is needed at this station to minimize walking distance to the station entrance because the walk from the station entrance to the platforms will be quite long.

» **Mark Center Transit Station:** This facility will require at least three additional bays on the north side of Mark Center Avenue.

» **Landmark Mall Transit Station:** With redevelopment of the mall site, at least six bus bays and two layover spaces should be provided to accommodate the 2030 network. It is likely that a temporary space, off-site, will be needed during redevelopment of the mall site. One option for a temporary off-site facility would be for buses to loop Walker Street and Stevenson Avenue and having temporary bus bays along those streets.

» **Shirlington Station:** Existing service to Shirlington Station is using the maximum capacity of the facility. Up to 3 additional bays may be needed to accommodate all routes terminating and passing through that center, assuming ART and other WMATA services remain as is.

In addition to these key transit centers, anywhere that frequent routes cross, larger and more visible bus shelters and stops should be provided to ease transfers. Locations where these amenities would be highly beneficial include:

» King Street and Washington Street where the Old Town Circulator and Metrobus Routes 10A/B would cross.

» Along North Hampton Drive between Ford Avenue and King Street to accommodate connections between Routes N4 and N8.

» At King Street and Beauregard Street/Walter Reed Drive to accommodate connections between Routes N4 and N9.

» In Fairfax County, along Seminary Road near Gorham Street where Route N4 would connect with Routes 28A, 16H, and 16L.

» At Bradlee Shopping Center to facilitate connections between Routes N4 and N10/11.

There will also be additional needs for other capital improvements, such as ongoing bus replacement and fleet expansion, maintenance facility improvements, and other capital facility needs. These needs will be more fully assessed and documented as part of the DASH Transit Development Plan process.

Speed and Reliability Improvements

To reliably operate bus service in a busy and congested place like Alexandria can be an enormous challenge. Yet reliable operation is essential to building and maintaining ridership in the long term. The City of Alexandria has been planning for investments in speed and reliability in key corridors like the West End and Duke Street Transitways. To the maximum extent possible, these investments should be designed to allow multiple bus routes to benefit from the traffic signal priority, queue jump lanes, and dedicate spaces provided for buses.

Wherever possible, speed and reliability investments like dedicated lanes and queue jump lanes should be provided for all frequent bus routes in the 2030 Recommended Network. Key places, though, that would provide a maximum of benefit to the entire network would include improvements such as:

» King Street from King Street Metro to Fairfax Street: This section will be used by multiple routes for the Old Town Circulator and thus would be key to maintaining reliability for many routes across the city.

» King Street eastbound approaching King Street Metro: This section of King Street sees regular congestion at peak times and the N4 would benefit from a peak period dedicated lane or queue jump lane.

» Improvements at Shirlington Circle to make it easier and faster for buses to get into and out of Shirlington Station and Gunston Road.

» Queue jump lanes at key turns for the N8, for example at Beauregard Street and Little River Turnpike.

Providing dedicated space for transit is part of a set of policies to maximize the use of the limited space in the city. Reserving a lane for transit gives the most space-efficient users priority where they would otherwise be caught in the same delays as all other users.

3. Next Steps

What Happens Next?

The Draft Recommended Network is presented in this report for the consideration of the public, transit riders, community organizations, workers, businesses, and all other transit stakeholders in Alexandria.

In October and November 2019, the Alexandria Transit Vision team is soliciting public input and comments on this Draft Recommended Network. Those comments will be considered before the preparation of the Final Recommended Network.

The Final Recommended Network will be delivered to the City of Alexandria and DASH this winter, for potential implementation in 2022 and beyond. The changes shown in the 2022 Recommended Network could start being implemented as early as fall 2020, while the longer-term network would be in place by 2030, contingent on the increased funding from the City for the additional service included in the 2030 Network. Figure 11 provides an overview of the project timeline.

Learn more

For the full story of this process, we encourage the reader to start with two earlier reports:

» The Choices Report, released in September 2018, available at the project website.
» The Concepts Report, released in February 2019, available at the project website.

Members of the public are encouraged to attend public meetings and submit comments online, in response to this Draft Recommended Network. To find public meetings and other opportunities for input, visit www.dashbus.com/transitvision.

Your opinion matters!
Go to www.dashbus.com/transitvision
and take the survey!

Figure 38: Process and Timeline for Alexandria Transit Vision

Throughout the plan there will be:

- Updates to the project website
- Civic engagement opportunities
- Coordination meetings with other jurisdictions and transit providers
- Briefings to City leadership

Technical Work

Engagement

Spring 2018 — Project kickoff
Summer 2018 — Analysis of existing and future conditions
Fall 2018 — Engagement Round 1: Choices — Community meetings and survey — Stakeholder workshop
Develop and analyze draft bus network concepts
Winter 2019 — Engagement Round 2: Concepts — Community meetings and survey — Stakeholder workshop
Develop final bus network
Fall 2019 — Draft plan and near-term recommendations
Late 2019 — Final Transit Vision Plan and Near-Term Implementation Plan

Appendix A

Public and Stakeholder Engagement

How Did We Get Here?

Thus far, there have been two phases of public involvement in the Alexandria Transit Vision process.

In Phase 1, in the fall of 2018, the City and consulting team presented people with abstract choices and trade-offs, and received the public's general guidance in response. During Phase 1, input was collected through social media, email, public meetings and through a Stakeholder Advisory Committee. Over 300 responses to a web and paper survey were received from the general public and riders.

In Phase 2, from winter 2019 to spring 2019, the team presented people with two different, detailed Network Concepts for Alexandria, and received people's responses to the specific trade-offs and ideas shown in those Concepts. During Phase 2, input was collected through 1,199 responses to a web and paper survey of the general public and riders.

Input received during both of these phases and input from the Alexandria Transportation Company (ATC) Board was used, in summer 2019, to develop this Draft Recommended Network. The ATC board indicated that the draft recommended network should dedicate 85% of its budget to frequent service likely to have high ridership. The remaining 15% of the budget should be directed to coverage designed to ensure that certain areas and populations have access to some transit, even if these routes have low ridership.

This direction represents as shift from the current network which dedicates roughly 50% is its budget to ridership service and 50% to coverage service. The service implications of this priority change are more clearly shown in the network maps in Chapter 2.

Choices Report and Phase 1 Input

In the first round of engagement for the Alexandria Transit Vision, or "Choices" phase, the study team asked the public and community stakeholders about their values and priorities for transit, and how they might balance certain trade-offs related to transit service in Alexandria. These trade-offs are consistent with the findings presented in the Choices Report in October 2018.

During this first of three phases of engagement, the study team held:

» a stakeholder workshop;

» two in-person community meetings;

» nine pop-up events at activity centers across Alexandria;

» a meeting with DASH bus drivers;

» briefings to the Alexandria Transportation Commission and DASH Board;

» extensive social media outreach through DASH and City channels on Twitter and Facebook; and

» digital outreach via email blasts from the City and DASH and via the project website.

Throughout these outreach efforts, a Choices Survey was available online and on paper in both English and Spanish. The following summarizes some of the key takeaways from the survey.

Summary of Respondents

In total, the study team received 320 responses from the public to the survey. Of those, 287 (90%) either lived or worked in the City of Alexandria. About half of respondents (47%) ride the bus more than 15 days per month, while the percentage of frequent Metrorail riders was slightly lower at 37%. In general, the demographic characteristics of survey respondents were fairly in-line with the makeup of the city for age and income. In terms of ethnicity, non-Hispanic whites were overrepresented in the survey response and the Hispanic and African American populations were under-represented. Additional efforts will be made to reach these groups in the second round of engagement.

The stakeholder group is comprised of civic leaders from across the city, representative of a variety of interests and expertise. Fifty stakeholders attended the Choices Workshop, where they worked in a hands-on manner, exploring trade-offs in transit network design. Based on the day's work, polling was conducted to understand the group's values related to the key transit choices.

The results from the public survey and stakeholder polling were generally consistent, though some questions were asked in different ways. The following sections present a summary of the public survey responses.

Transit Benefits

The first survey question asked respondents to prioritize six benefits of transit. The top four responses (in order) were:

» Allowing people to move around the city efficiently without increasing auto congestion

» Providing access to jobs and services for people who don't have a car, or those with low incomes

» Providing high-quality transit in areas where the service will be used by a lot of people

» Providing basic public transportation to everyone, regardless of where they live

The first and third statements relate to the benefits of ridership-focused networks. The second and fourth statements correlate to coverage goals. This suggests some divergence in the goals that people in Alexandria want transit to achieve. This is understandable, as people often want transit to achieve many goals, even when those goals lead agencies in opposite directions on service design.

Coverage versus Frequency

The next question asked if respondents preferred a transit system that prioritized coverage or ridership and frequency and it provided an example of what each network would look like. Figure 4 shows the responses. Approximately 56% of respondents selected the option that preferred the frequent network but also provided some coverage service. Only 20% of respondents preferred or strongly preferred the high-coverage scenario.

Walking Versus Waiting

The third question asked respondents if they would prefer to walk longer and wait less at a bus stop or wait longer but not have to walk as far. Figure 5 shows the responses. Approximately 90% of respondents preferred or strongly preferred the trip with less waiting, even if it meant more walking. This preference correlates to ridership networks, in which routes would run more frequently on major corridors and walks might be longer.

Transfers

The last question asked respondents if they preferred a faster overall trip, even if it meant transferring, or if they preferred a one-seat ride, even if the overall travel time was longer. Figure 6 shows the responses. Approximately 74% of respondents preferred or strongly preferred the faster trip. This preference correlates to ridership networks, where fewer, high-frequency routes provide faster trips, but tend to require more transfers.

Investment Priorities

The final technical question on the survey asked respondents to rank their priorities for new investment in transit service. Response options included the following choices:

» Providing additional service during the peaks
» Adding service on off-peak or weekends
» Providing service to places that don't have service
» Adding more amenities
» Reducing fares

A plurality of 42% respondents ranked "adding frequency during weekday rush hours to reduce the waiting time between buses" as their first choice. The second highest was "providing service to places that don't currently have service," although only 18% of respondents ranked it first. Providing more service during peak would generally correlate with ridership networks, but peak-only service can be very costly, as described in the Choices Report, and therefore adding more peak service is not always the most cost-effective way to get higher ridership.

Respondents could also indicate their priorities for other investments in a free-response option on the survey. A review of these responses indicated various desired improvements, but several themes reoccurred across multiple responses. These common themes are shown in the word cloud below. Note that ideas that were more common in responses are formatted to stand out more than others.
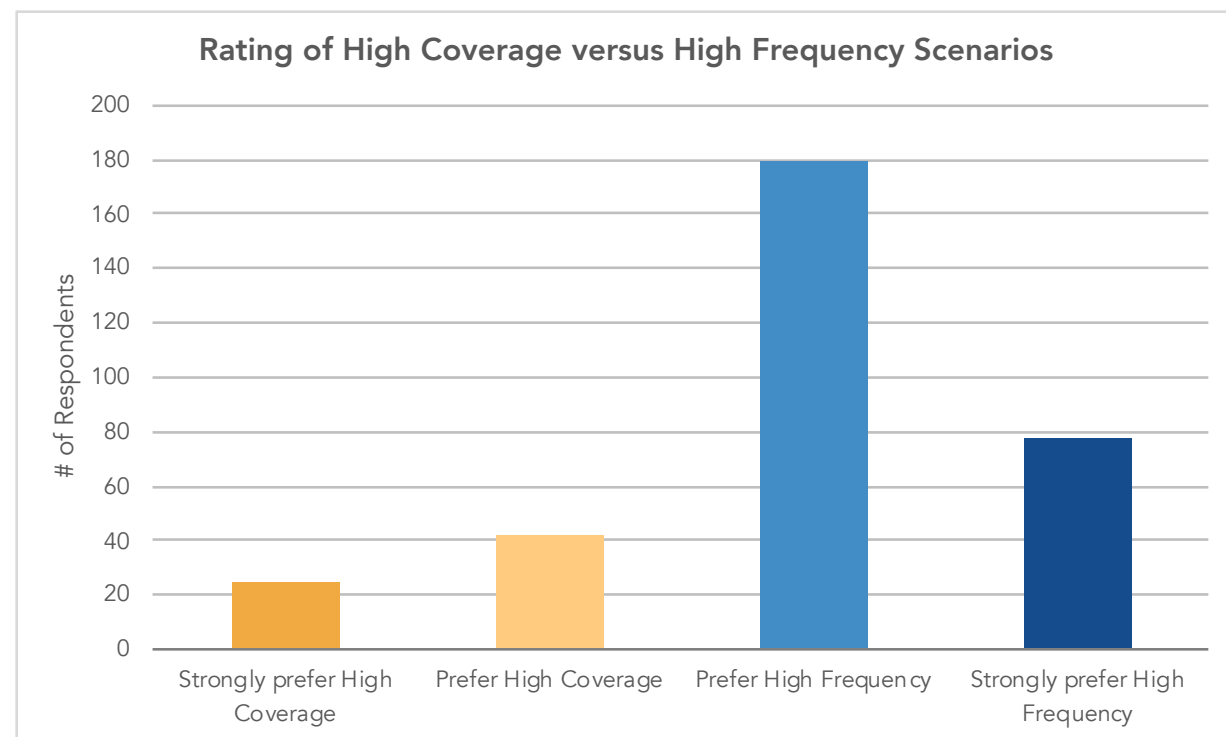
Figure 39: Survey respondents generally said they preferred a High Frequency system.
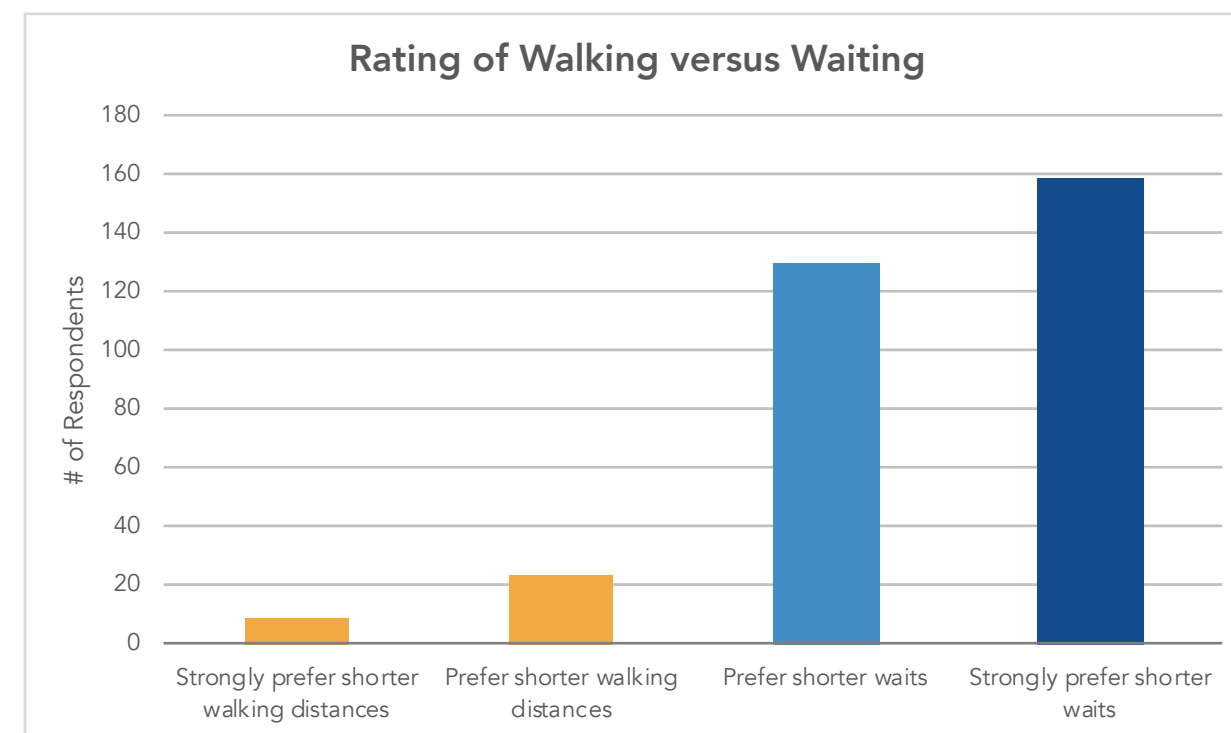
Figure 40: Most survey respondents said they preferred a shorter wait.

Concepts and Phase 2 Input

In order to help people understand key trade-offs and develop confident opinions, the consulting team created two different Network Concepts.

These two Concepts illustrated the key choice: how should Alexandria balance ridership and coverage goals? And, relatedly, how should walking and waiting be traded-off?

Maps of the Concepts are shown on the following page (Figure 43 and Figure 44). For more detailed maps and analysis of how each concept would serve Alexandria, see the Concepts Report.

During this second phase of engagement, the study team received feedback from the public through a survey asking people to rate the concepts and key transit priorities. To reach many Alexandrians the study team held:

» a stakeholder workshop;

» three in-person community meetings;

» sixteen pop-up events at activity centers across Alexandria;

» a meeting with DASH bus drivers;

» community and neighborhood organization briefings with numerous groups across the city;

» briefings to the Alexandria Transportation Commission and DASH Board;

» extensive social media outreach through DASH and City channels on Twitter and Facebook; and

» digital outreach via email blasts from the City and DASH and via the project website.

Summary of Respondents

In total the study team received 1,199 distinct public responses to the public survey. Among the respondents, 94% indicated that they live in the City of Alexandria and about half (46%) ride the bus more than 15 days per month. In general, the demographic characteristics of survey respondents tended towards middle-aged (41 to 60) and represented higher incomes when compared to the population of Alexandria. In terms of ethnicity, non-Hispanic whites were overrepresented in the survey response and the Hispanic and African American populations were under-represented. Additional efforts were made to prepare analyses related to and conduct outreach with these underrepresented communities.

A stakeholder group was initially engaged in the first phase of the study. During the second round of engagement, 26 community

partners attended a workshop to discuss the concepts and were polled on priorities and their opinion of the developed concepts. Both Stakeholder and the public survey results identified similar priorities as well as a preference for a ridership-oriented concept. The following sections present a summary of the public survey responses.
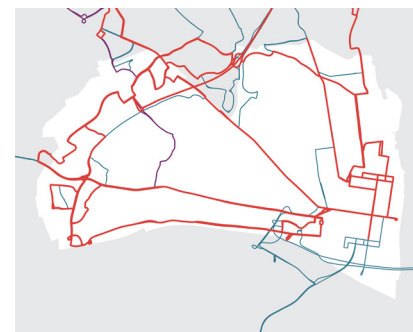
Priorities

The first question asked in the public survey is comparable to question about transit benefits asked in the first round of engagement. Instead of choosing between trade-offs, participants were asked to rank eight competing priorities. Each of the priorities related to either coverage or ridership to demonstrate their individual affinity for how they prefer their transit service to operate.

Figure 42 indicates the number of times each priority was rated as an individual's top three priorities. Results indicate that respondents had a greater affinity for ridership-oriented priorities (particularly for high frequency), but desired a greater duration of coverage all day for both weekdays and weekends.

Ridership Concept

Coverage Concept

Where should the transit network be, on this spectrum?

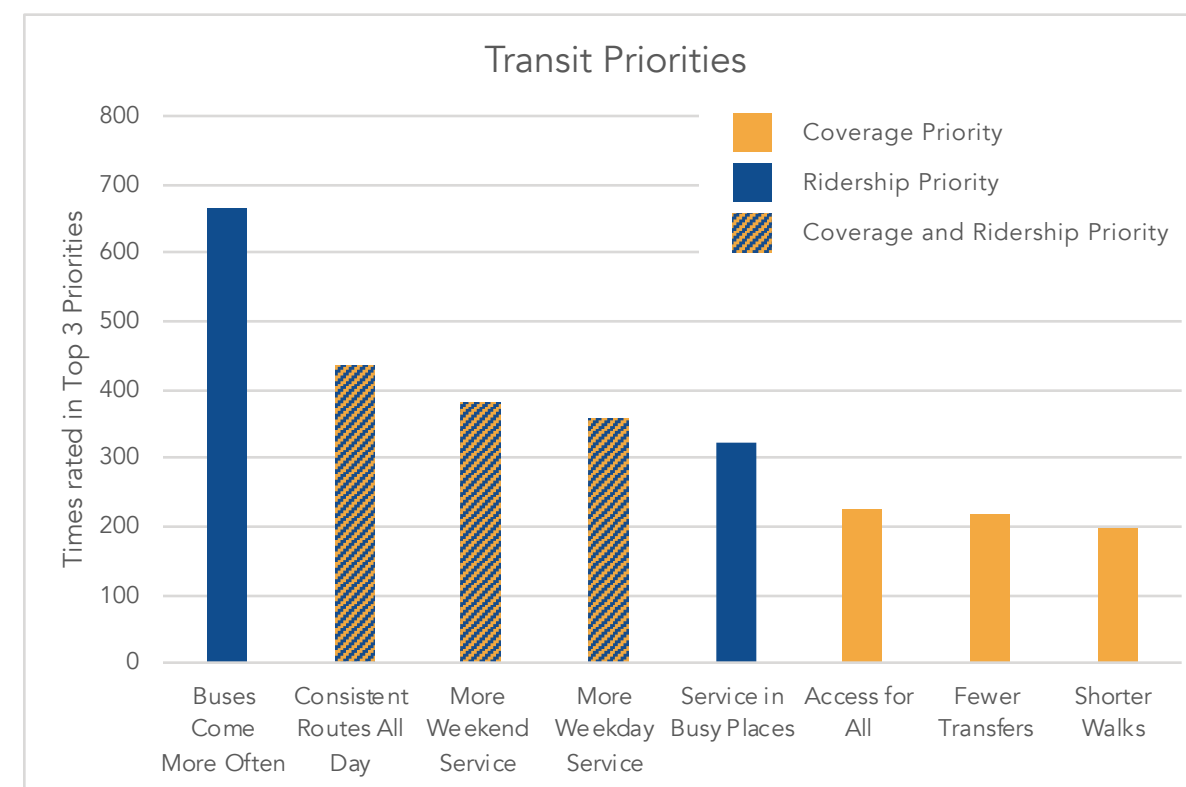**Figure 41: The two concepts show a range of choices for the Alexandria transit system**

Figure 42: Priorities of survey respondents in Phase 2 Survey

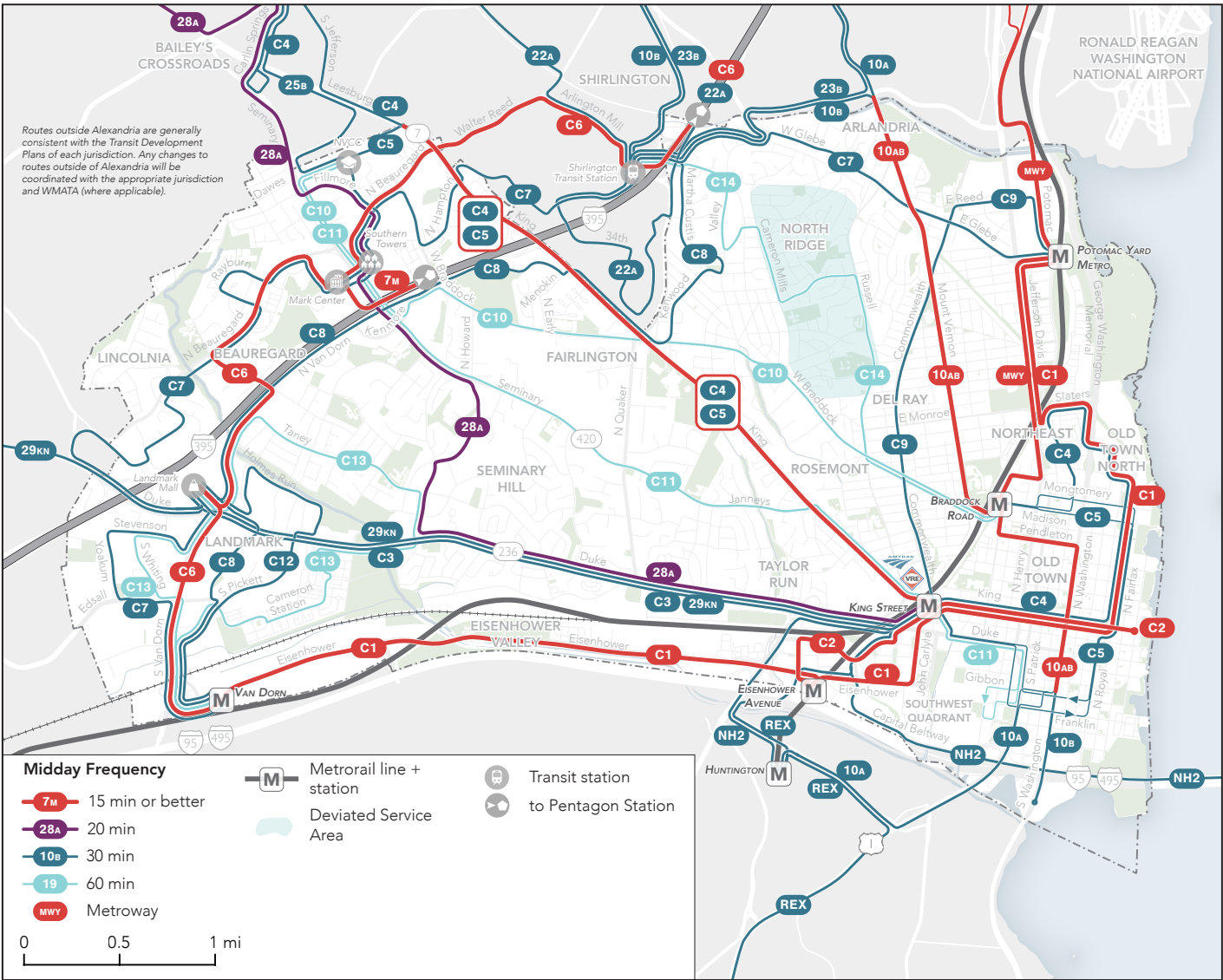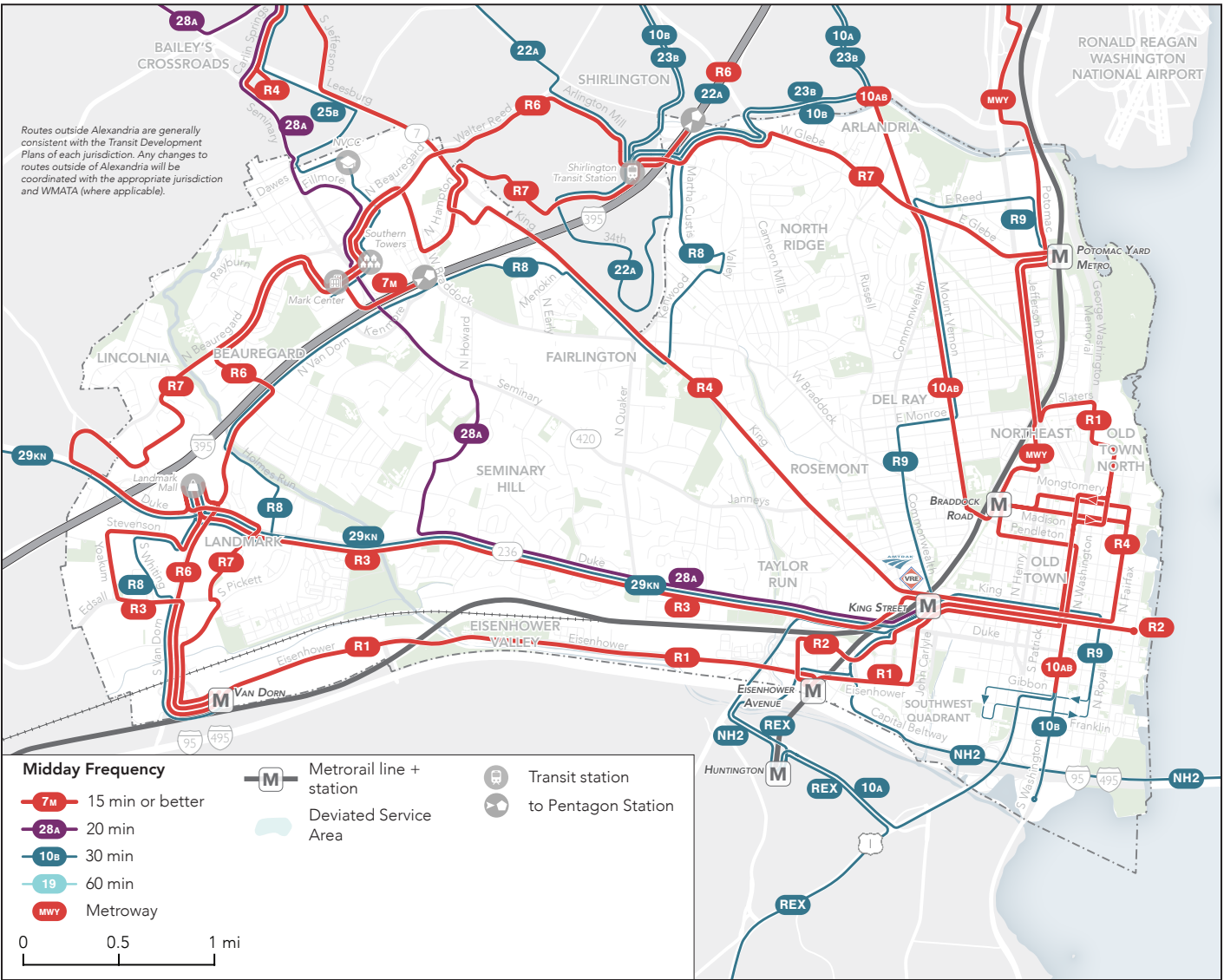**Figure 43: Map of the Coverage Concept**

Figure 44: Map of the Ridership Concept

Response to Concepts

The next section of the concepts survey asked that participants review and rate each of the two concepts and the existing transit network and a scale of 1 to 5 (with 1 being the lowest and 5 being the highest). Responses are shown in Figure 45.

On average, respondents indicated a preference for the ridership concept over the coverage concept; both concepts averaged higher than the existing network. The ridership concept was rated 5 more times than the coverage concept and the existing network. The coverage concept was rated 4 slightly more than the ridership concept and somewhat more than the existing network. The existing network was ranked 3 significantly more times than either of the concepts.

Support for Increased Investment in Transit

The last section of the concepts survey asked participants if they supported increased investment in transit and asked the respondent for comments related to transit investment. Respondents indicated that 91% are in favor of transit investment if their individual transit priorities were achieved.

General Feedback

The free response section of the survey included a few key themes which were common among multiple respondents. Those themes and additional takeaways from meetings with community organizations include:

» There is concern for the removal of specific routes, including those around North Ridge and Parkfairfax.

» There is strong support for increased frequency at all times of days.

» Respondents want to see buses running full.

» There is concern over potential loss of service to areas with higher concentrations of seniors and persons with limited mobility

» There is support for increased spending if it results in the reduction of traffic and/or of single occupancy vehicles. This was generally mentioned in combination with the desire for dedicated bus lanes which increase transit speed.

» While generally supportive of increased spending, respondents have mixed opinions of the source of the money (fares, taxes, or other city budgets).

Figure 45: The Ridership Concept received the highest average rating

Today's DASH Network
Average: 3.20

Coverage Concept
Average: 3.43

Ridership Concept
Average: 3.48
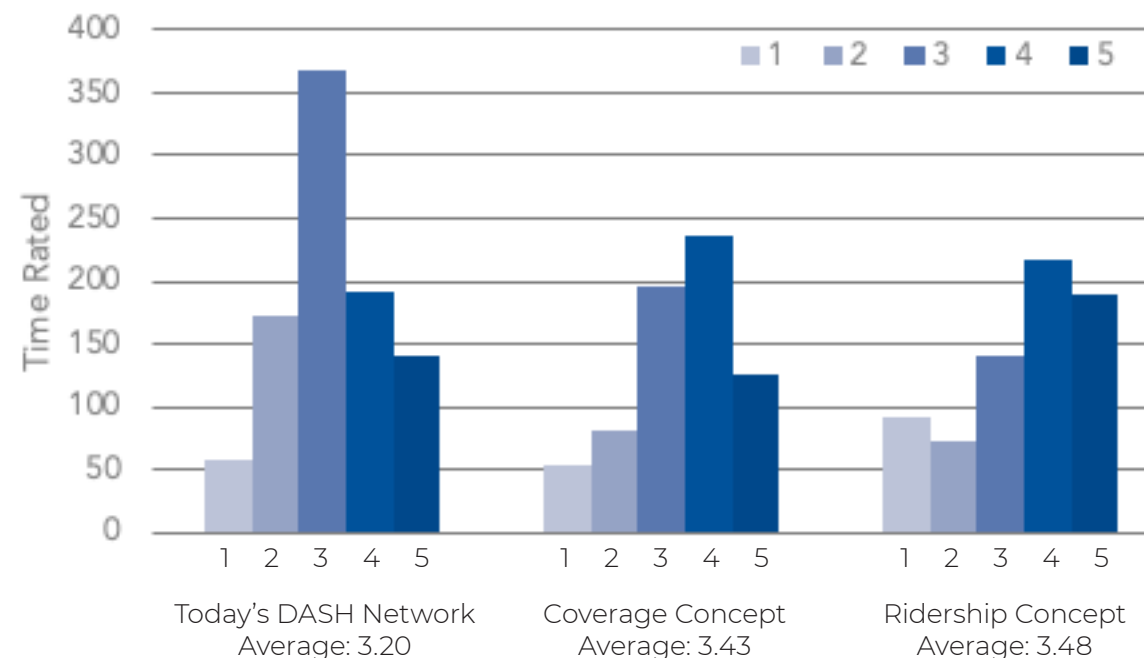
Figure 46: Most respondents said they would support an increase in transit investment

Question: "If your selected priorities for transit in Alexandria were achieved, would you support an increase in transit investment?"

9% NO

91% YES
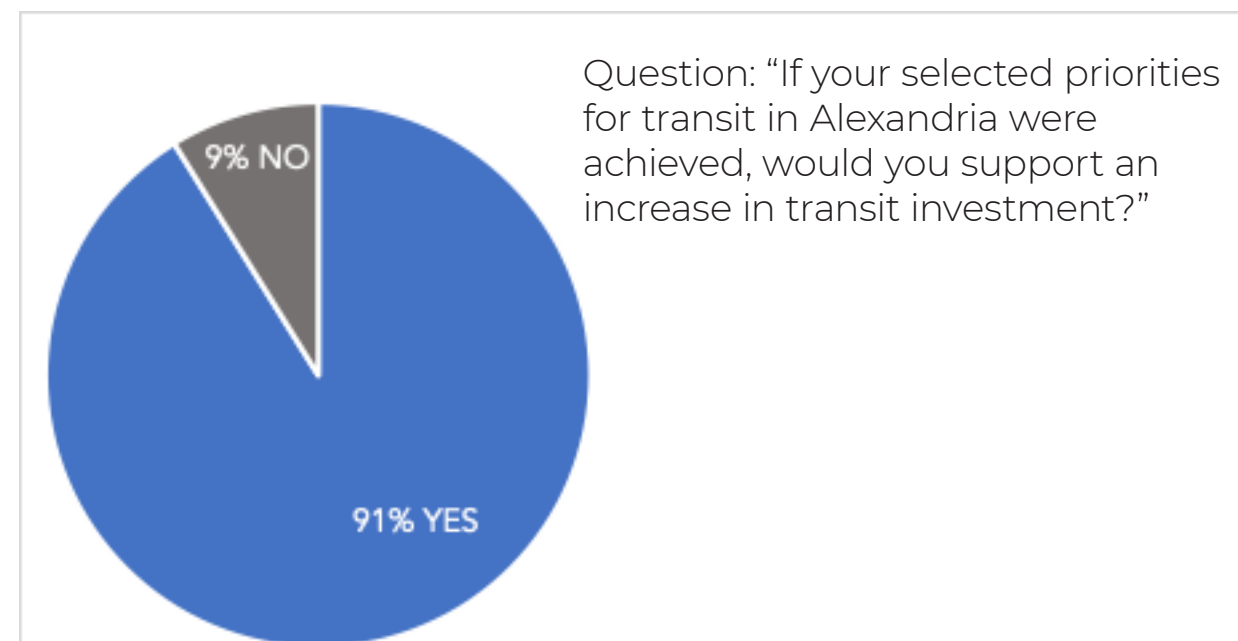
Appendix B:

2030 Network Isochrone Maps

Figure 47: Isochrone showing the change in access from Beauregard Street and Sanger Avenue

How far can I travel in 30 minutes from Beauregard St & Sanger Ave at 12 pm?

New Access

Retained Access

Lost Access

Draft Recommended 2030 Network

64% more residents and 89% more jobs accessible than existing network

0   1 miles
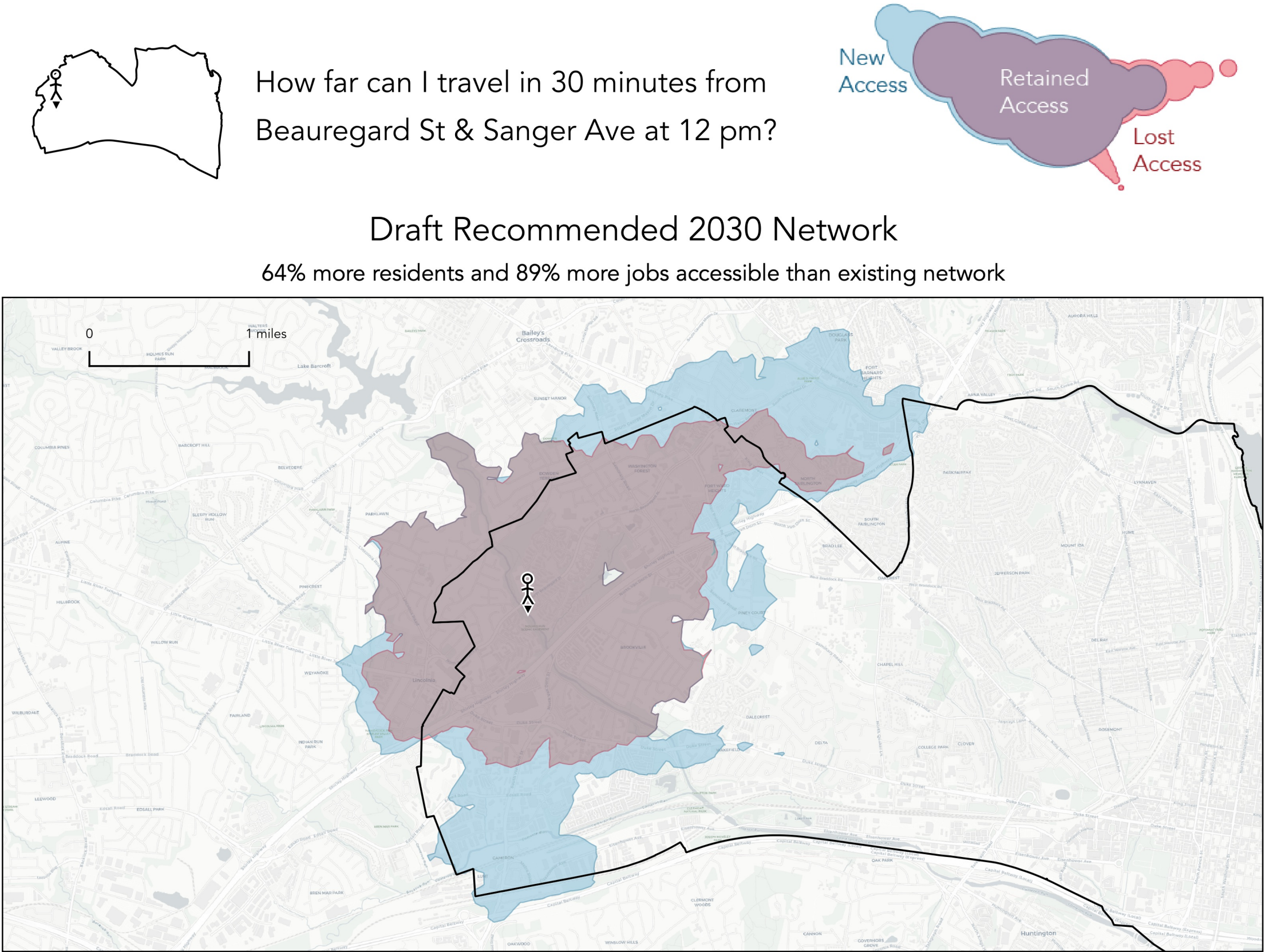
Figure 48: Isochrone showing the change in access from Duke Street and Jordan Street

How far can I travel in 30 minutes from Duke St & Jordan St at 12 pm?

New Access

Retained Access

Lost Access

Draft Recommended 2030 Network
139% more residents and 294% more jobs accessible than existing network
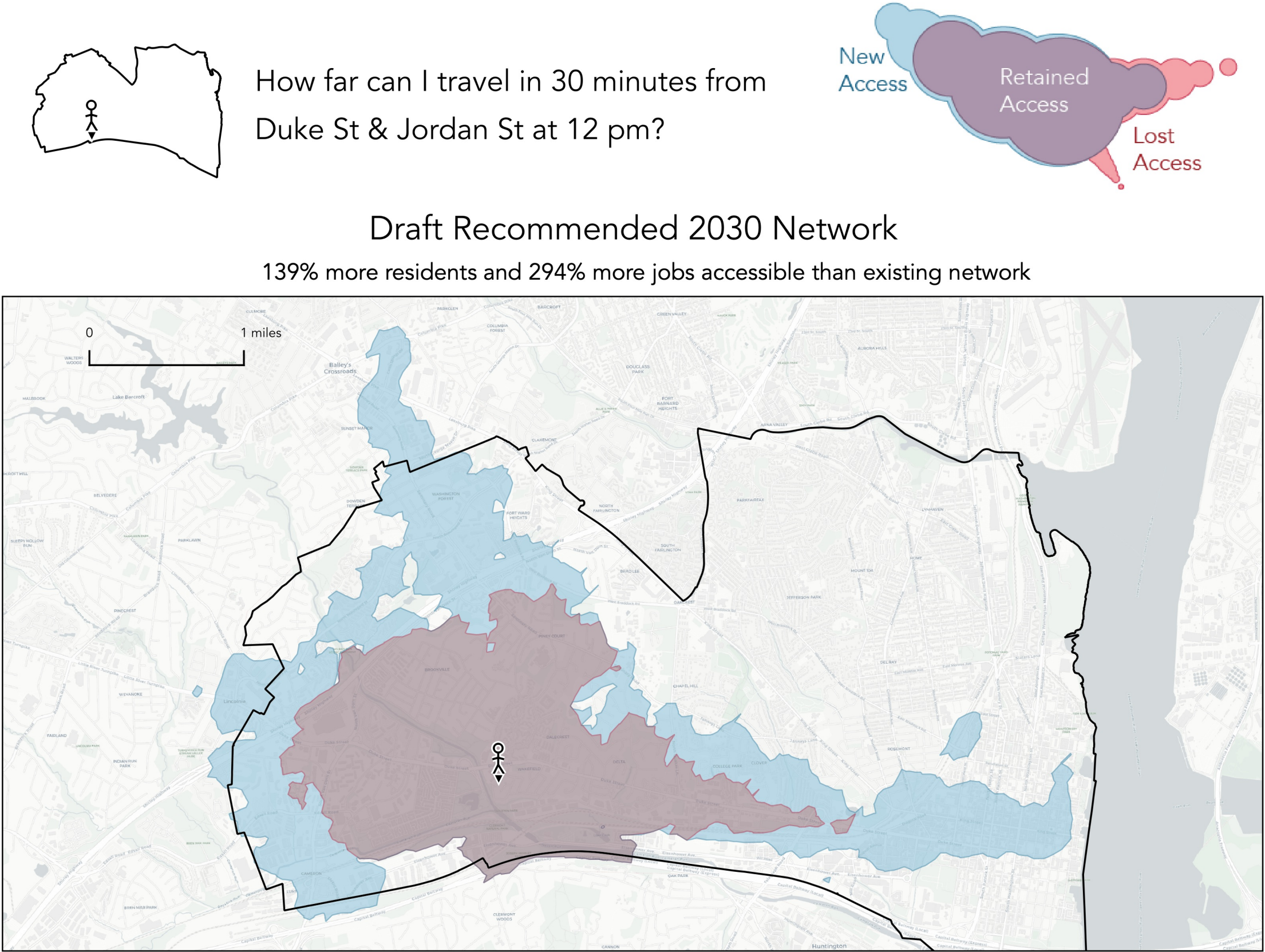
Figure 49: Isochrone showing the change in access from Eisenhower East Metrorail Station

How far can I travel in 30 minutes from Eisenhower East at 12 pm?

New Access
Retained Access
Lost Access

Draft Recommended 2030 Network

24% more residents and 32% more jobs accessible than existing network
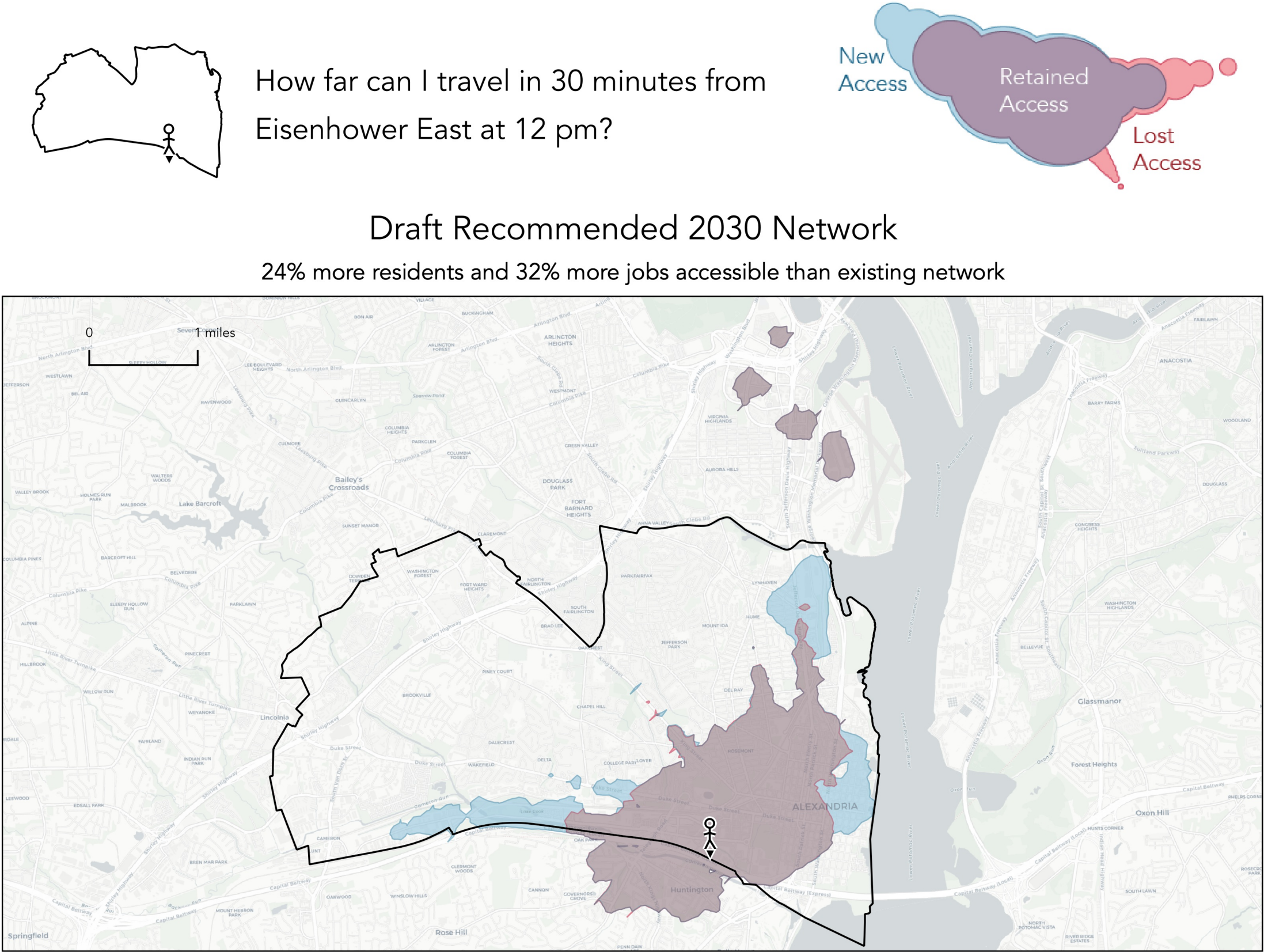
Figure 50: Isochrone showing the change in access from Parkfairfax (Gunston Road and Valley Drive)

How far can I travel in 30 minutes from Gunston Rd & Valley Dr at 12 pm?

New Access

Retained Access

Lost Access

Draft Recommended 2030 Network

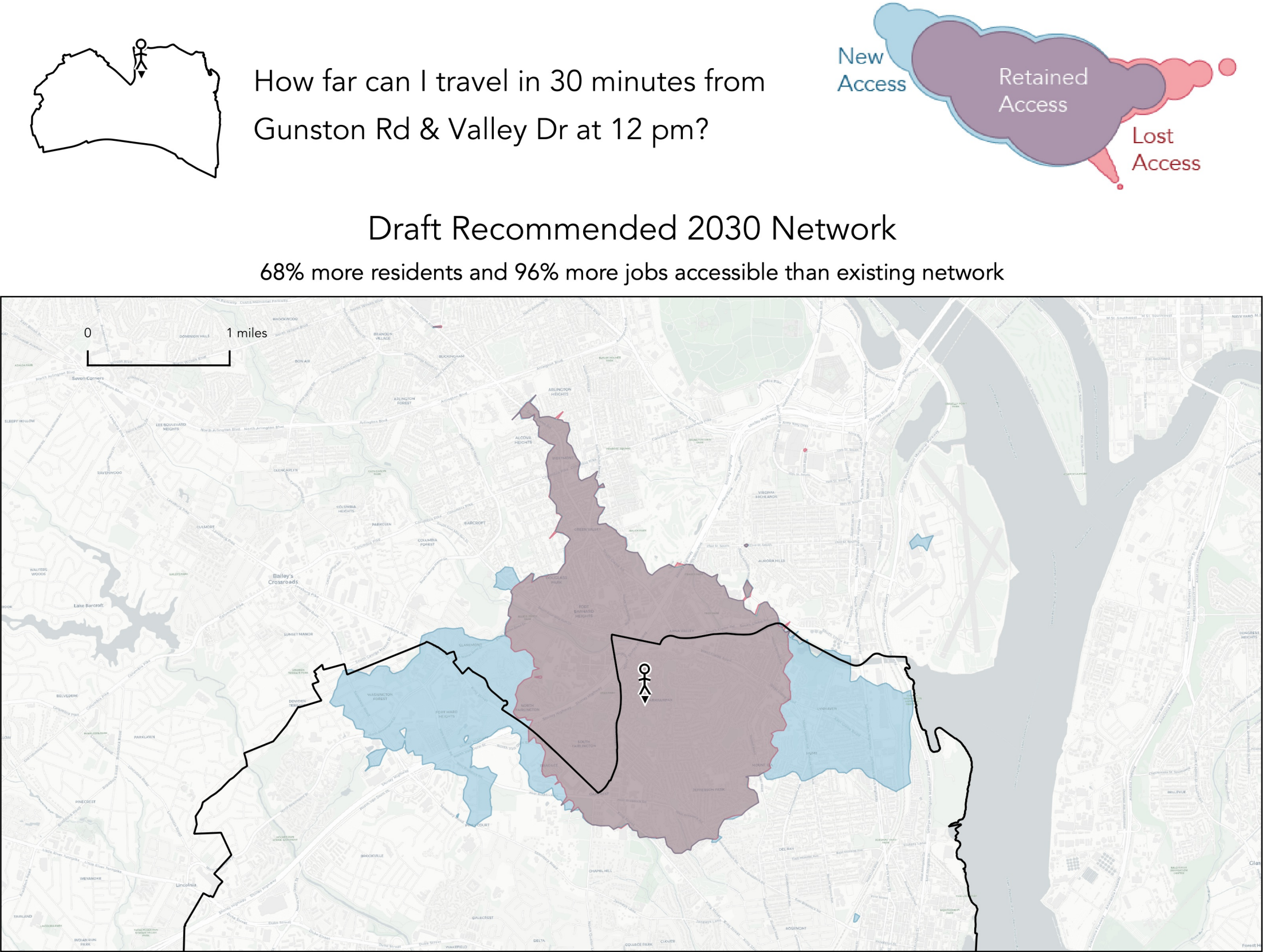68% more residents and 96% more jobs accessible than existing network

0   1 miles

Figure 51: Isochrone showing the change in access from Inova Alexandria Hospital (Seminary Road and Howard Street)

How far can I travel in 30 minutes from Inova Alexandria Hospital at 12 pm?

New Access   Retained Access   Lost Access

Draft Recommended 2030 Network
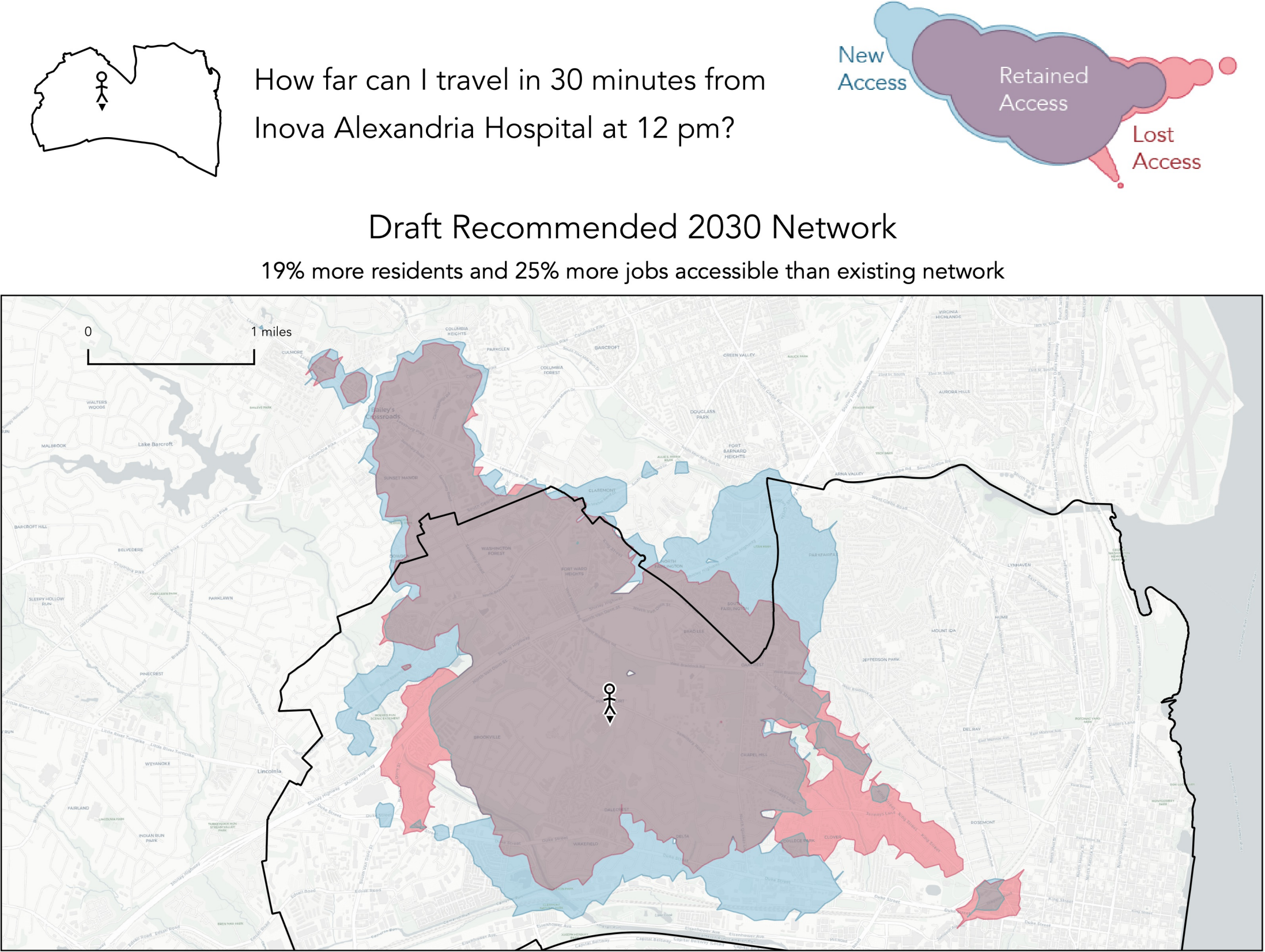
19% more residents and 25% more jobs accessible than existing network

Figure 52: Isochrone showing the change in access from King Street and Quaker Lane (near Bradlee Shopping Center)

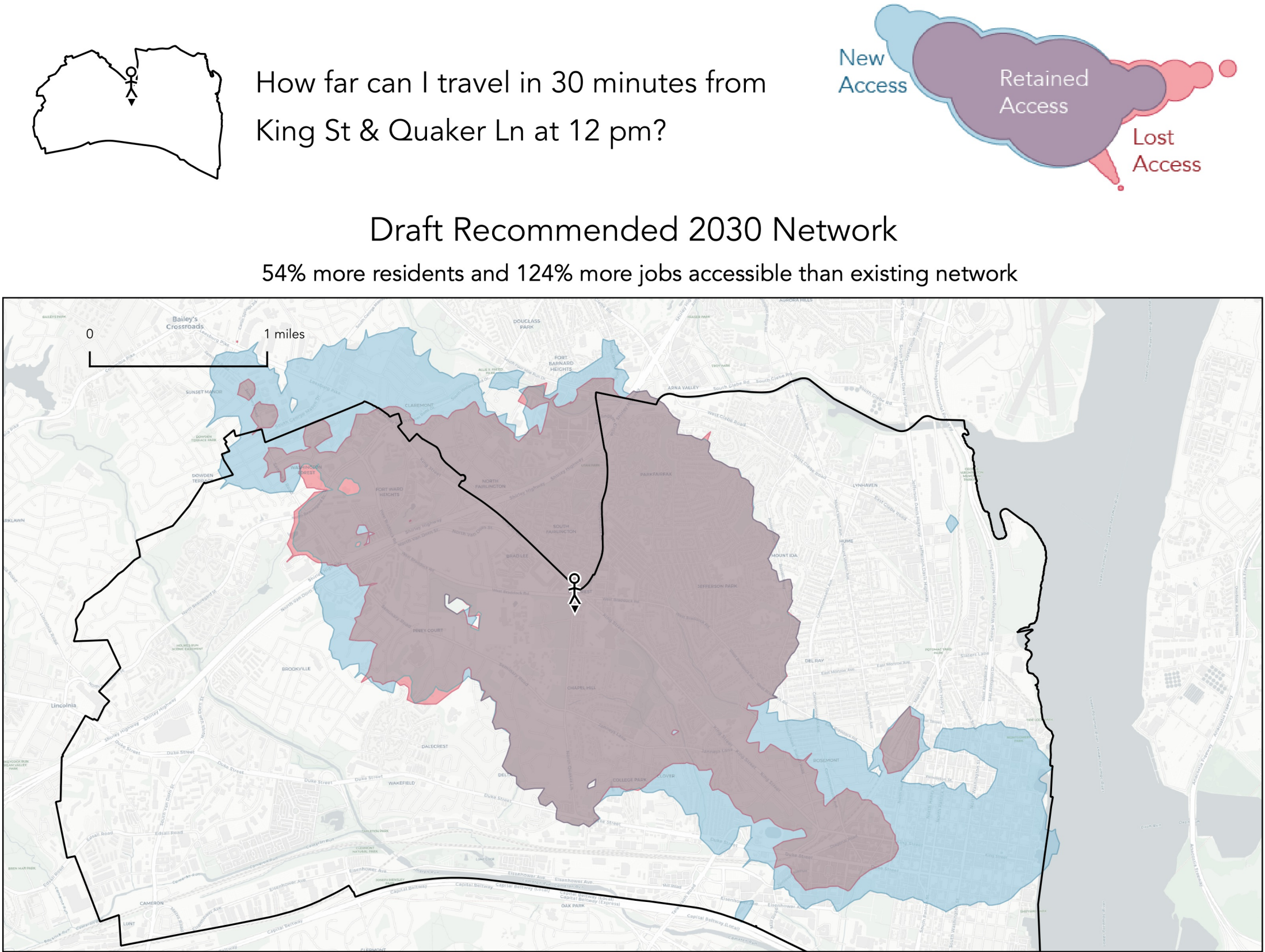How far can I travel in 30 minutes from King St & Quaker Ln at 12 pm?

New Access · Retained Access · Lost Access

Draft Recommended 2030 Network

54% more residents and 124% more jobs accessible than existing network

Figure 53: Isochrone showing the change in access from Landmark Mall

How far can I travel in 30 minutes from Landmark Mall at 12 pm?

New Access
Retained Access
Lost Access

Draft Recommended 2030 Network

67% more residents and 202% more jobs accessible than existing network
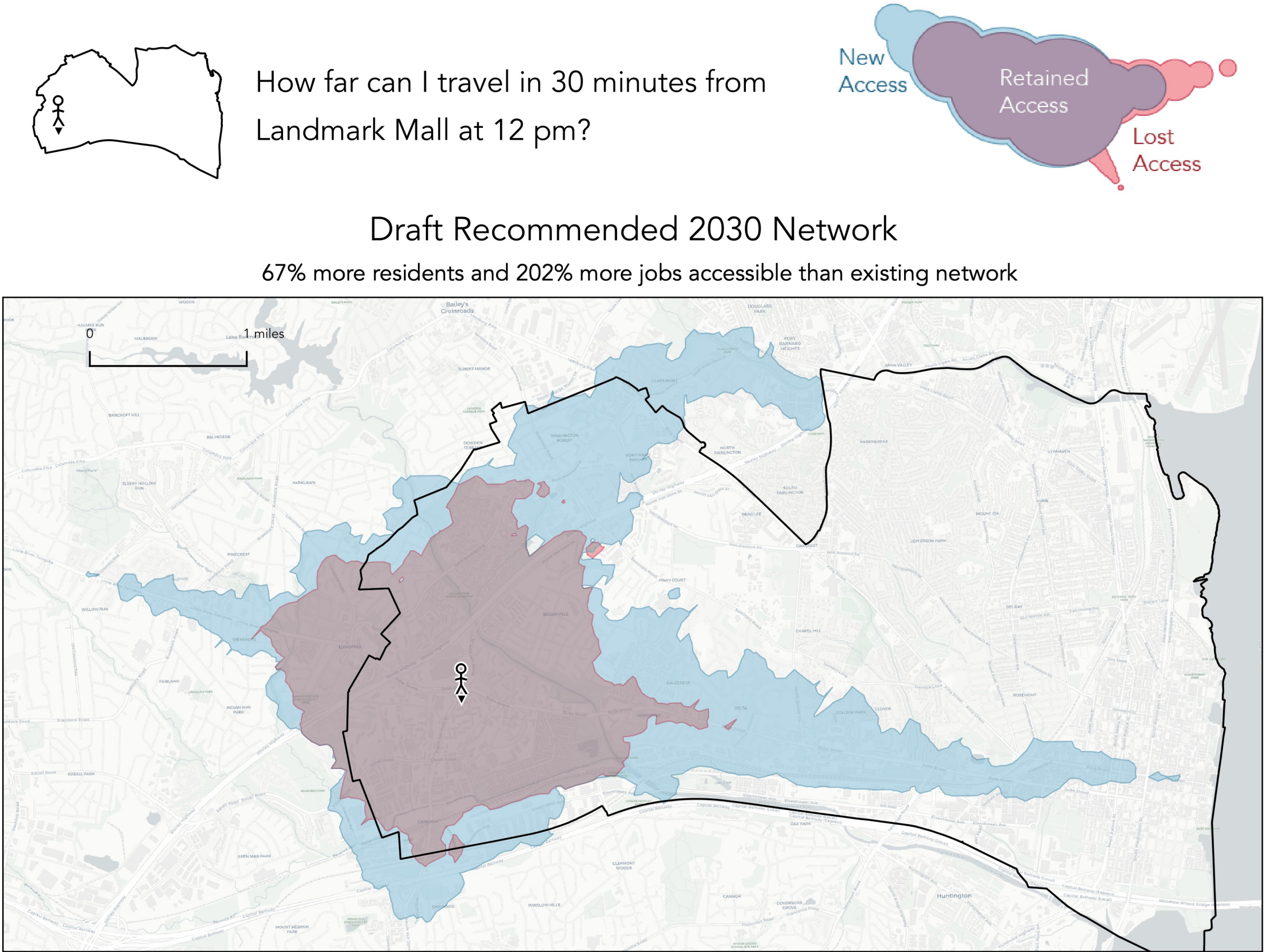
Figure 54: Isochrone showing the change in access from Mark Center

How far can I travel in 30 minutes from Mark Center at 12 pm?

New Access
Retained Access
Lost Access

Draft Recommended 2030 Network

58% more residents and 30% more jobs accessible than existing network
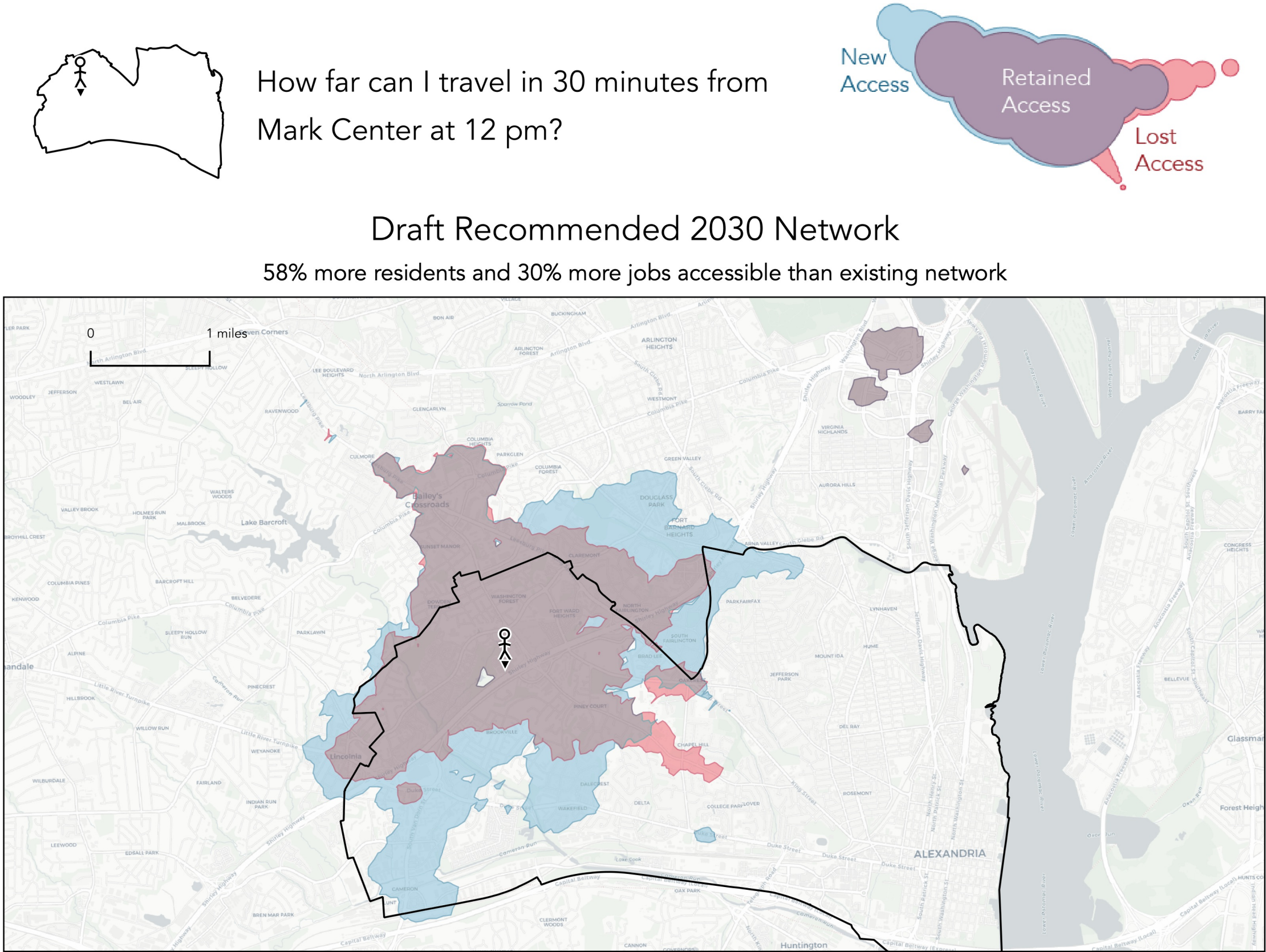
Figure 55: Isochrone showing the change in access from Old Town (King and Washington Streets)

How far can I travel in 30 minutes from Old Town at 12 pm?

New Access
Retained Access
Lost Access

Draft Recommended 2030 Network

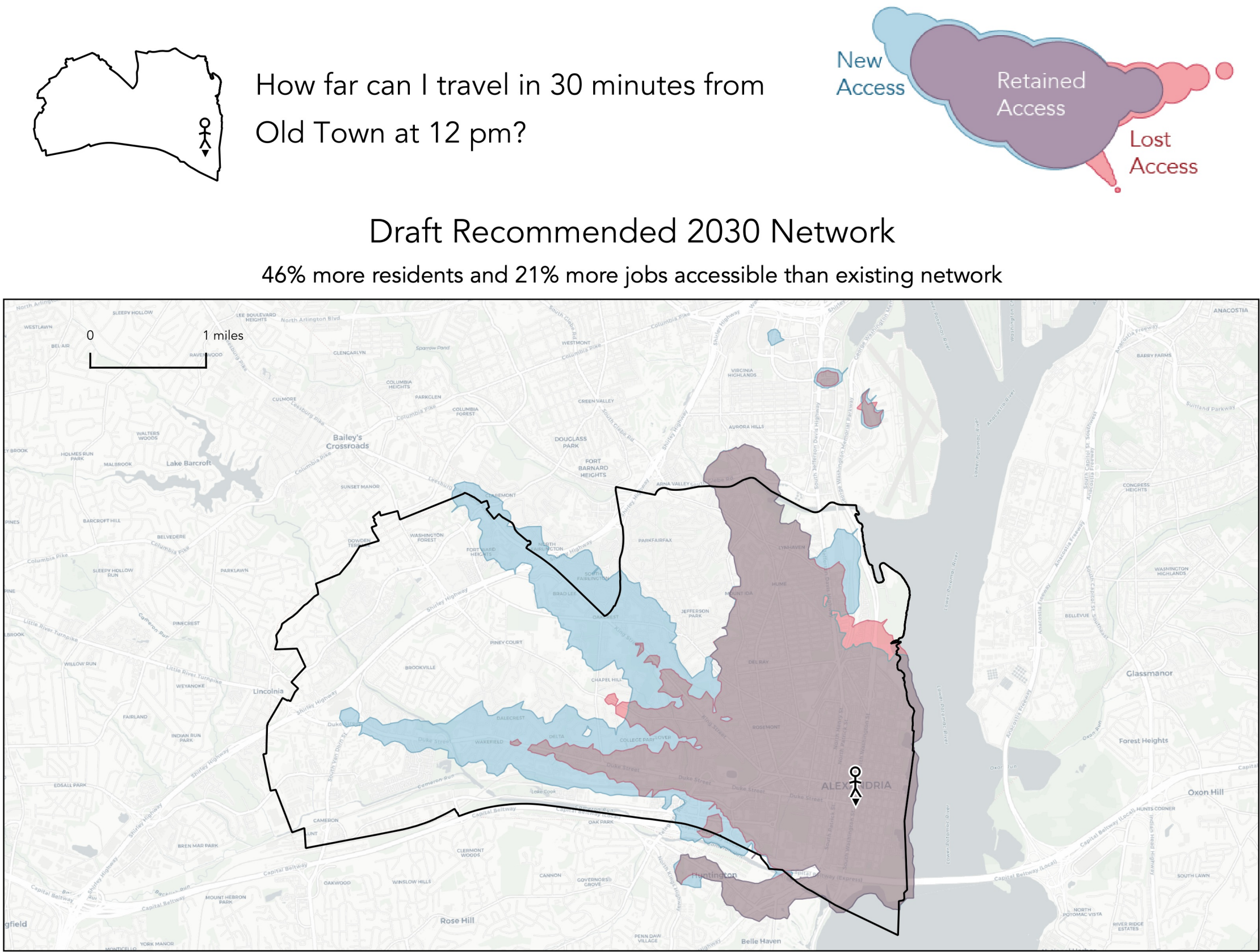46% more residents and 21% more jobs accessible than existing network

Figure 56: Isochrone showing the change in access from the Potomac Yard Metrorail Station

How far can I travel in 30 minutes from Potomac Yard at 12 pm?

New Access
Retained Access
Lost Access

Draft Recommended 2030 Network

36% more residents and 38% more jobs accessible than existing network
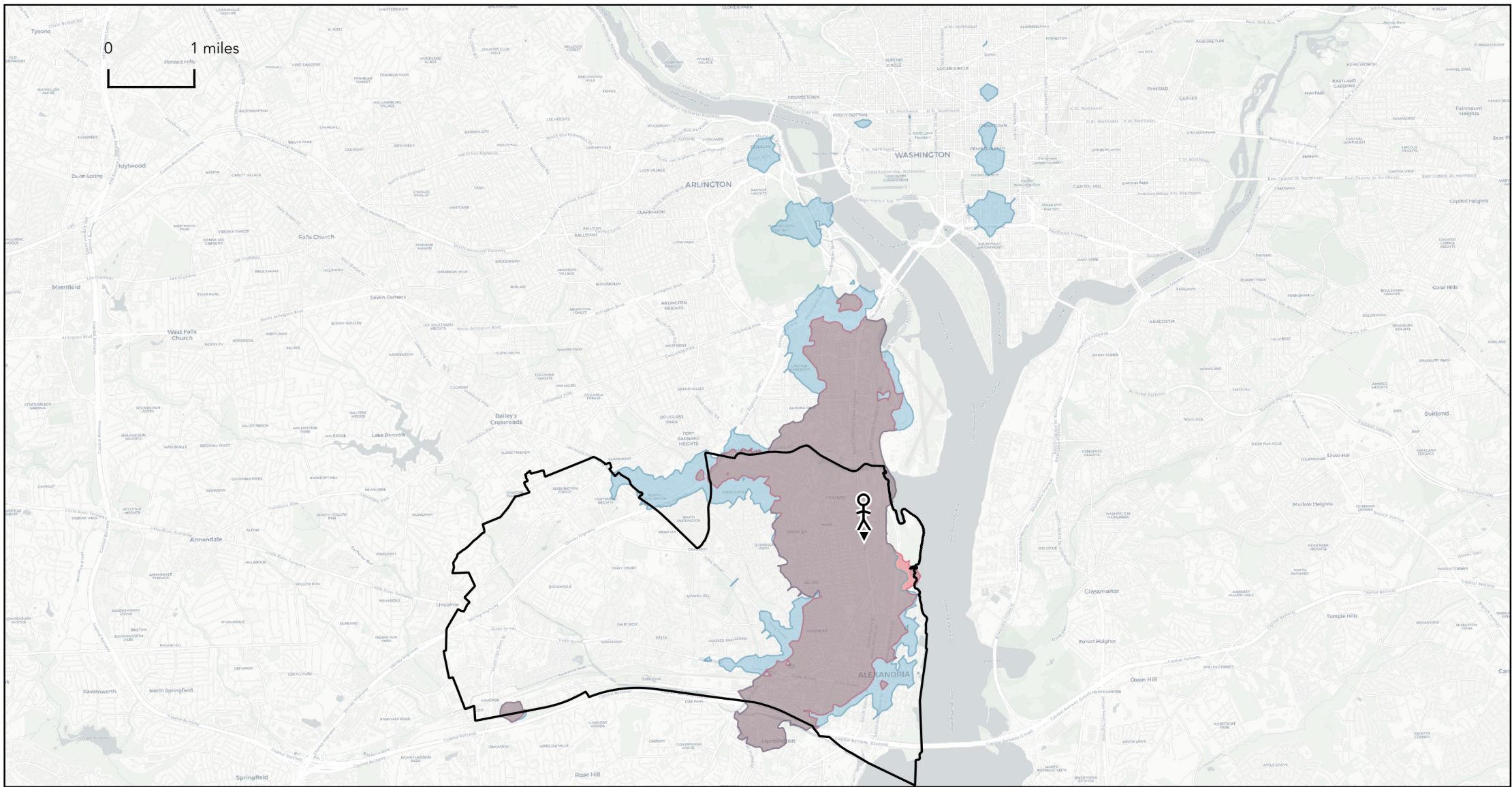
Figure 57: Isochrone showing the change in access from Reading Avenue and Rayburn Avenue

How far can I travel in 30 minutes from Reading Ave & Rayburn Ave at 12 pm?

New Access
Retained Access
Lost Access

Draft Recommended 2030 Network

38% more residents and 56% more jobs accessible than existing network

0   1 miles

Figure 58: Isochrone showing the change in access from Southern Towers

How far can I travel in 30 minutes from Southern Towers at 12 pm?

New Access

Retained Access

Lost Access

Draft Recommended 2030 Network

54% more residents and 35% more jobs accessible than existing network
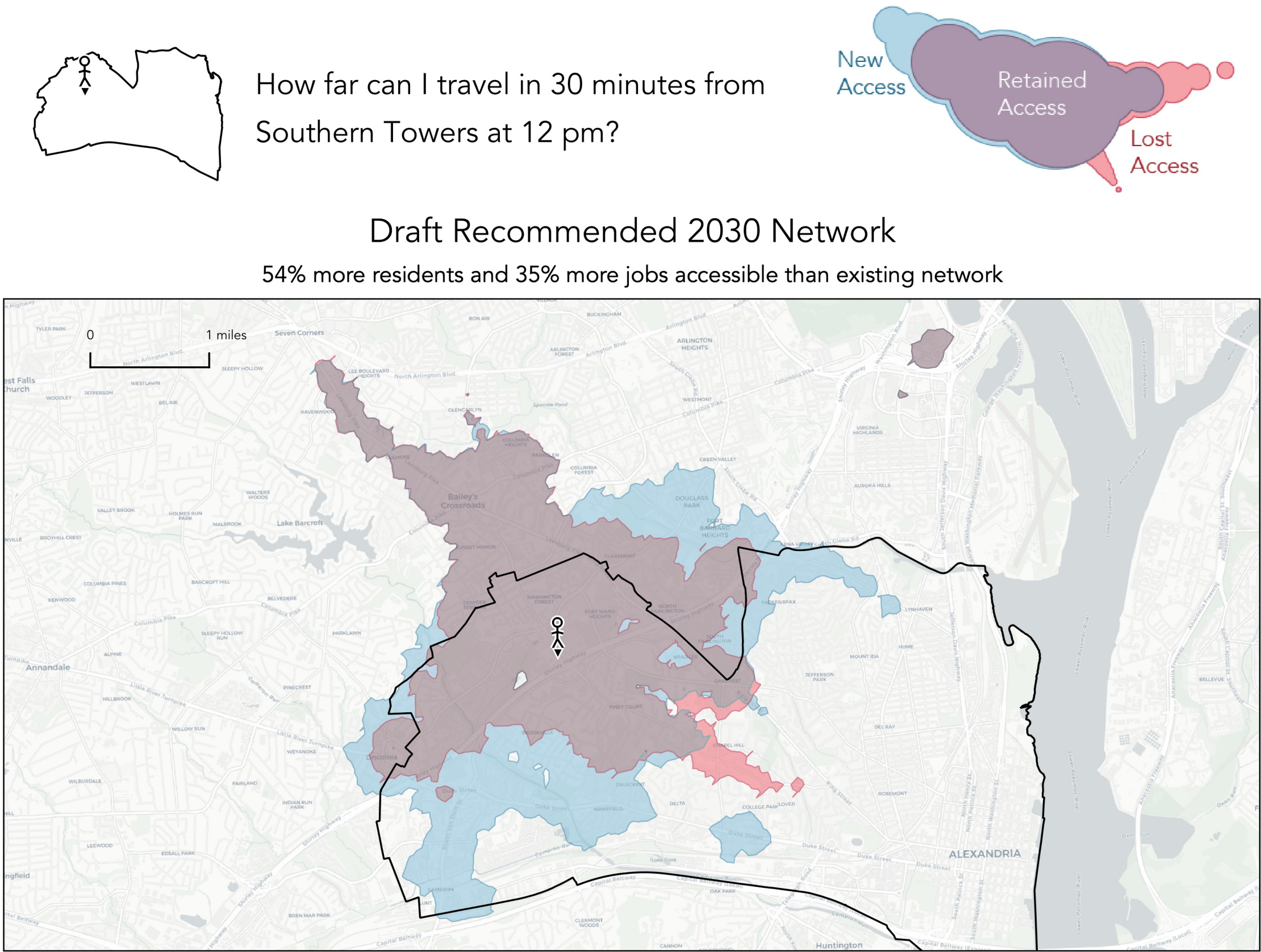
Figure 59: Isochrone showing the change in access from the Van Dorn Metrorail Station

How far can I travel in 30 minutes from Van Dorn Station at 12 pm?

New Access

Retained Access

Lost Access

Draft Recommended 2030 Network

112% more residents and 51% more jobs accessible than existing network

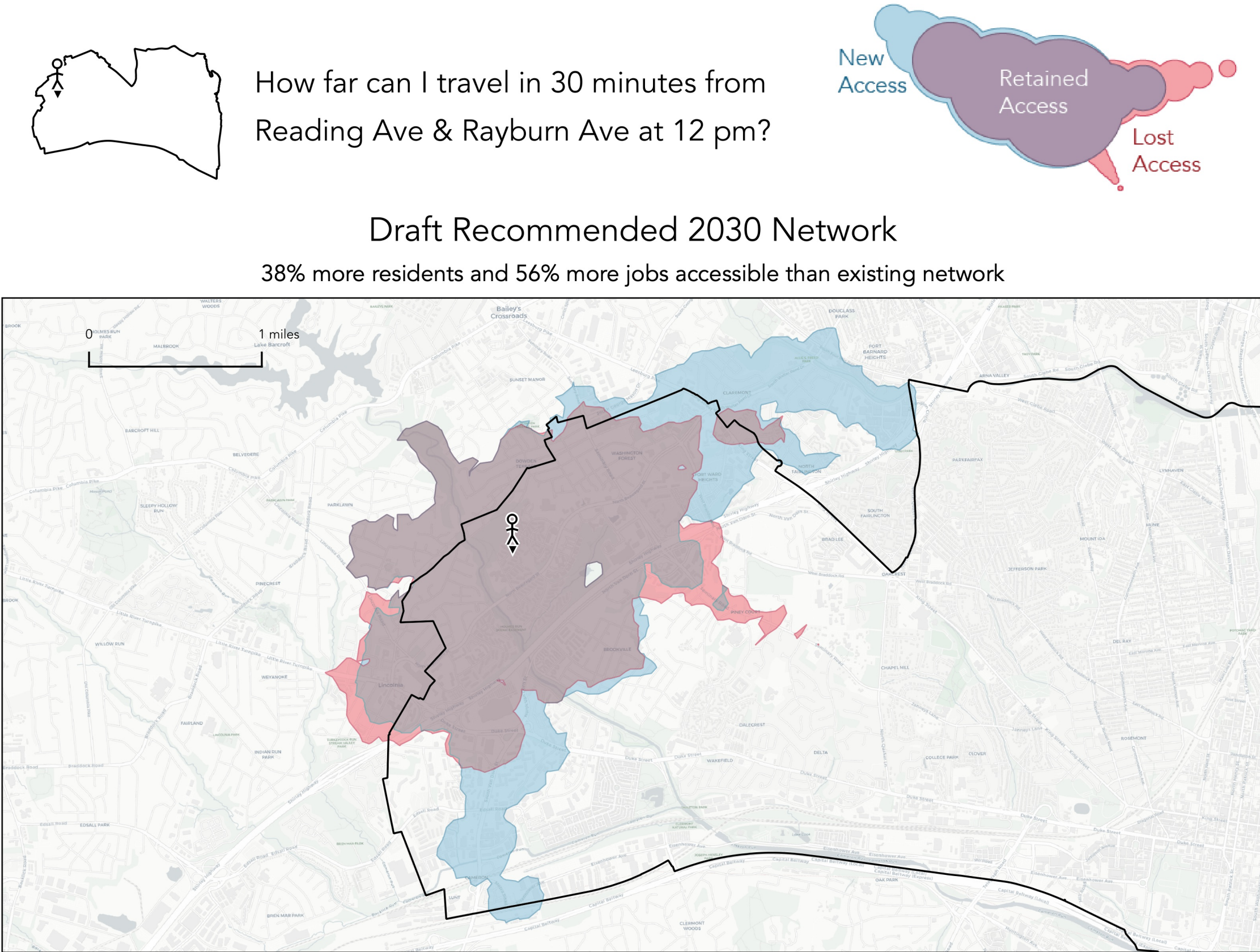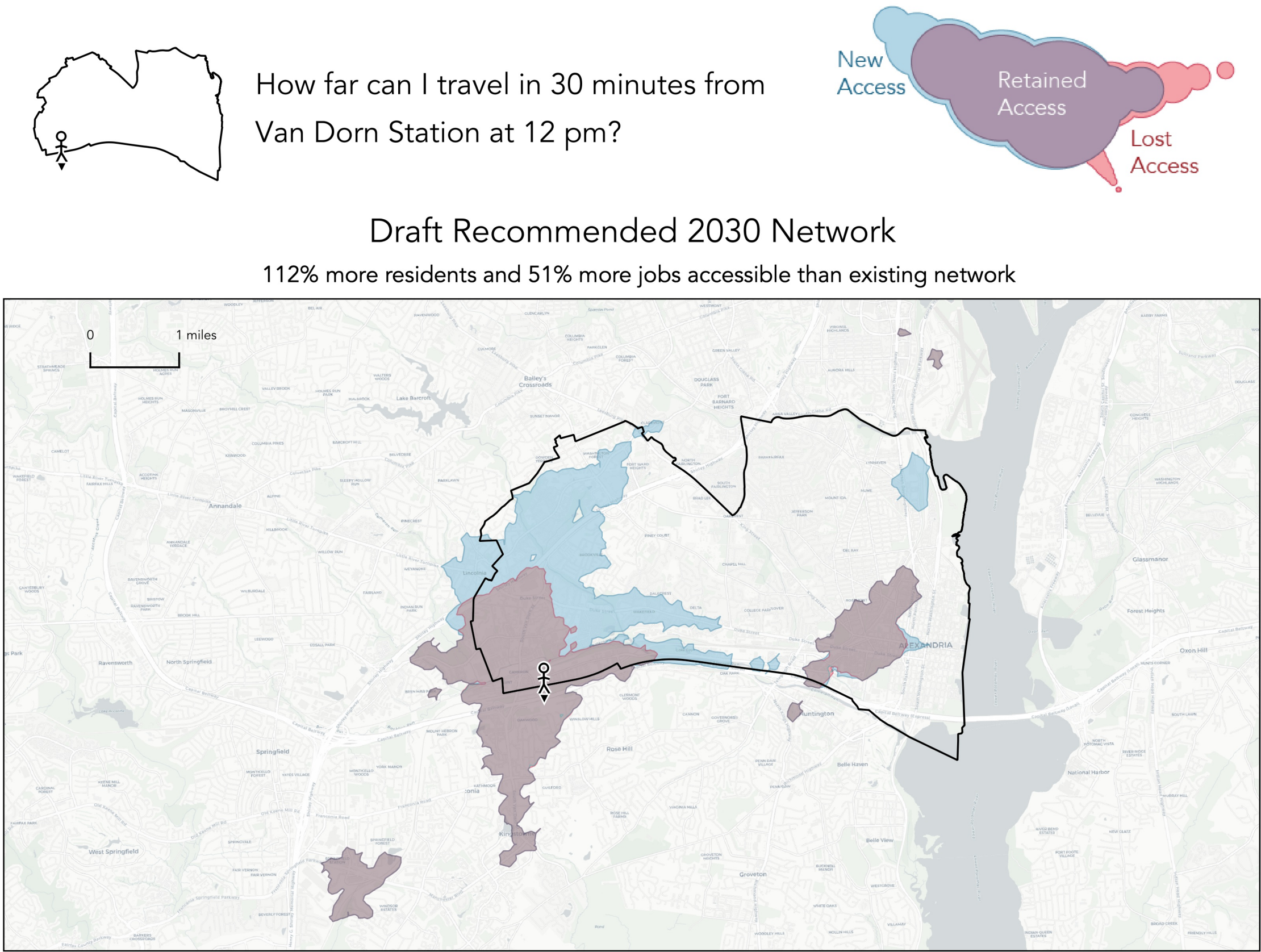**Figure 60: Isochrone showing the change in access from Arlandria (West Glebe and Old Dominion)**

How far can I travel in 30 minutes from W Glebe & Old Dominion at 12 pm?

New Access

Retained Access

Lost Access

Draft Recommended 2030 Network

58% more residents and 143% more jobs accessible than existing network
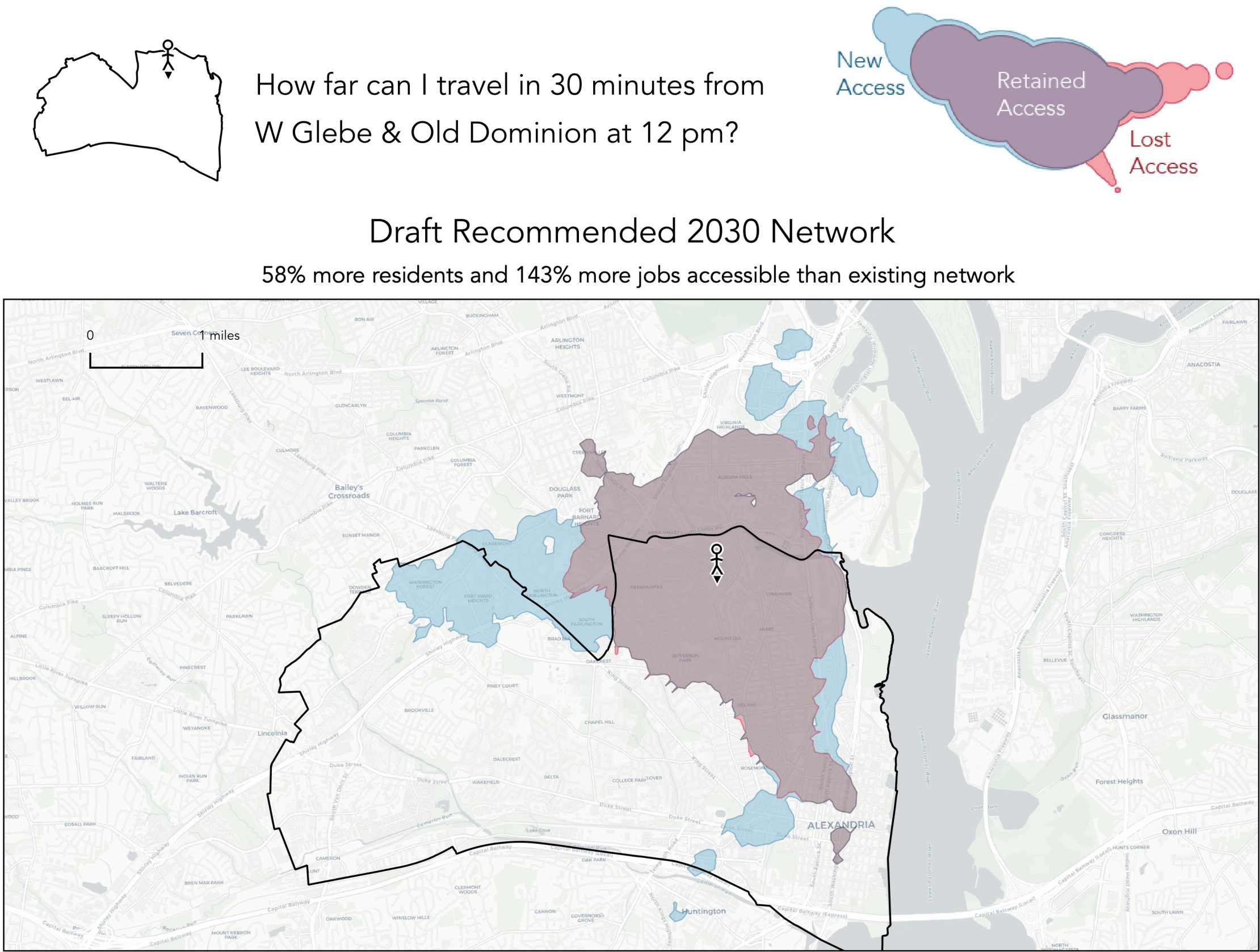
Figure 61: Isochrone showing the change in access from Shirlington (Randolph Street and Quincy Street)

How far can I travel in 30 minutes from Randolph St & Quincy St at 12 pm?

New Access · Retained Access · Lost Access

Draft Recommended 2030 Network

29% more residents and 27% more jobs accessible than existing network
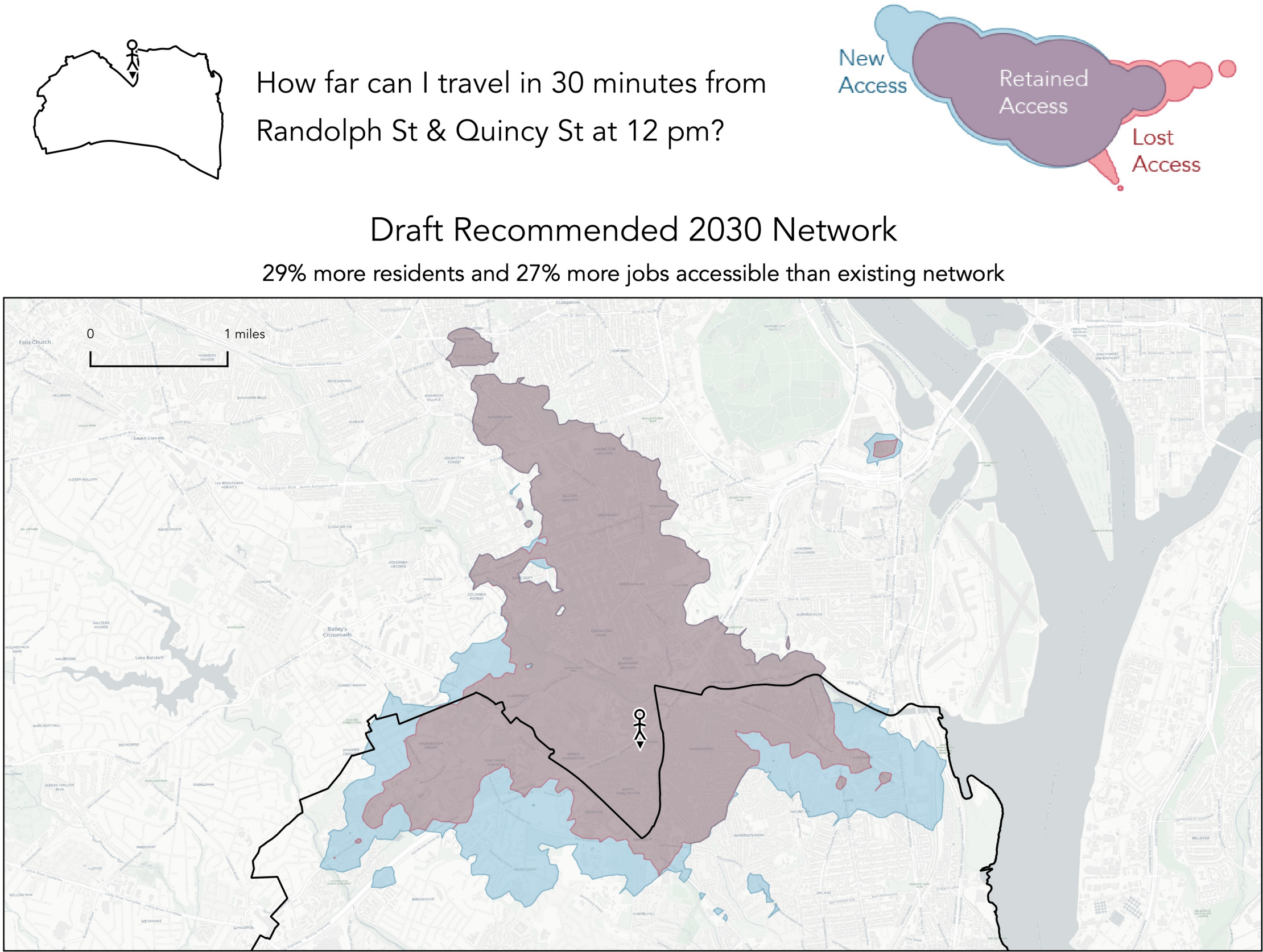
Appendix C

2022 Network Isochrone Maps

Figure 62: Isochrone showing the change in access from Beauregard Street and Sanger Avenue in 2022 Network
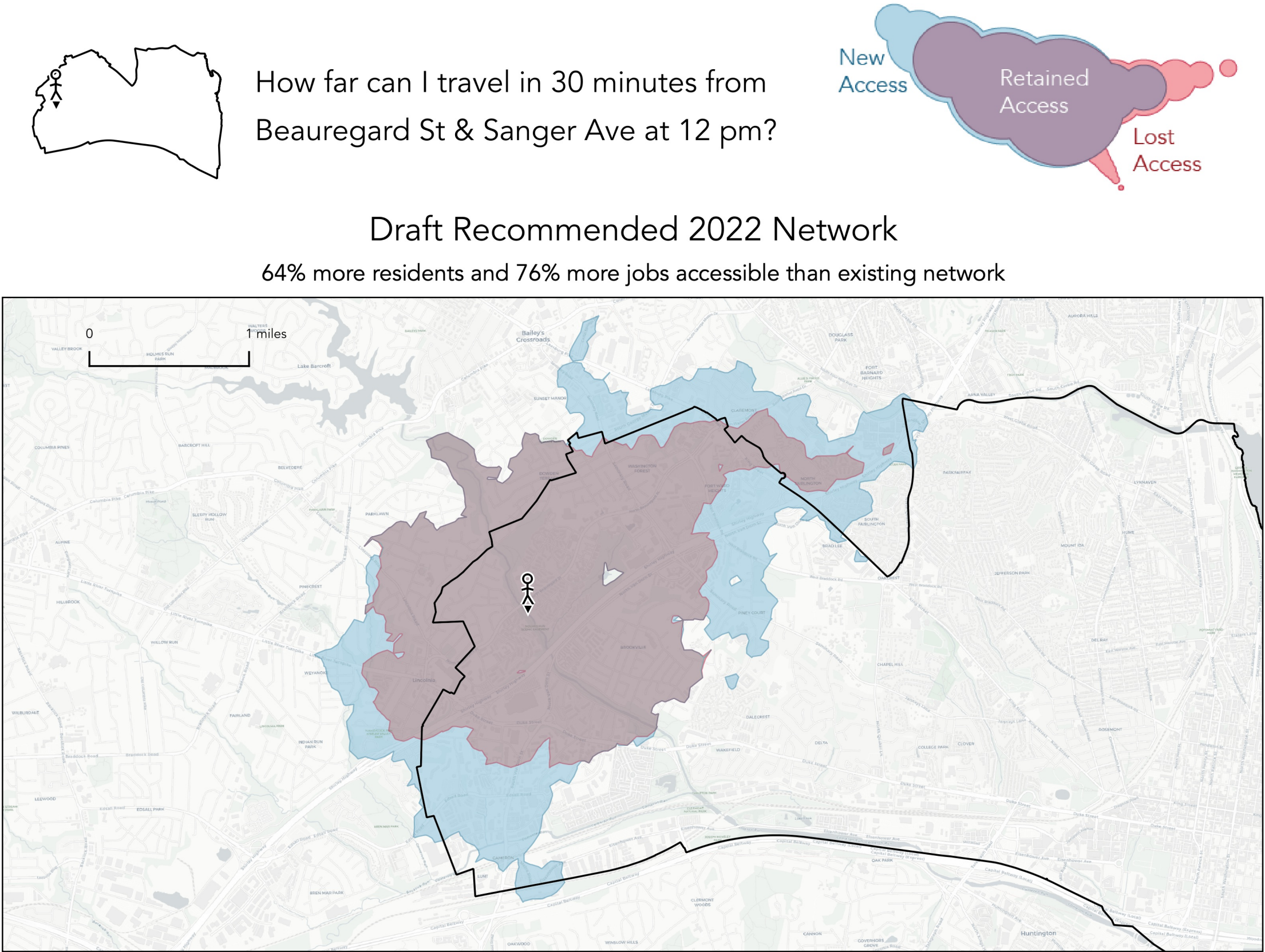
How far can I travel in 30 minutes from Beauregard St & Sanger Ave at 12 pm?

New Access

Retained Access

Lost Access

Draft Recommended 2022 Network

64% more residents and 76% more jobs accessible than existing network

Figure 63: Isochrone showing the change in access from Duke Street and Jordan Street in 2022 Network

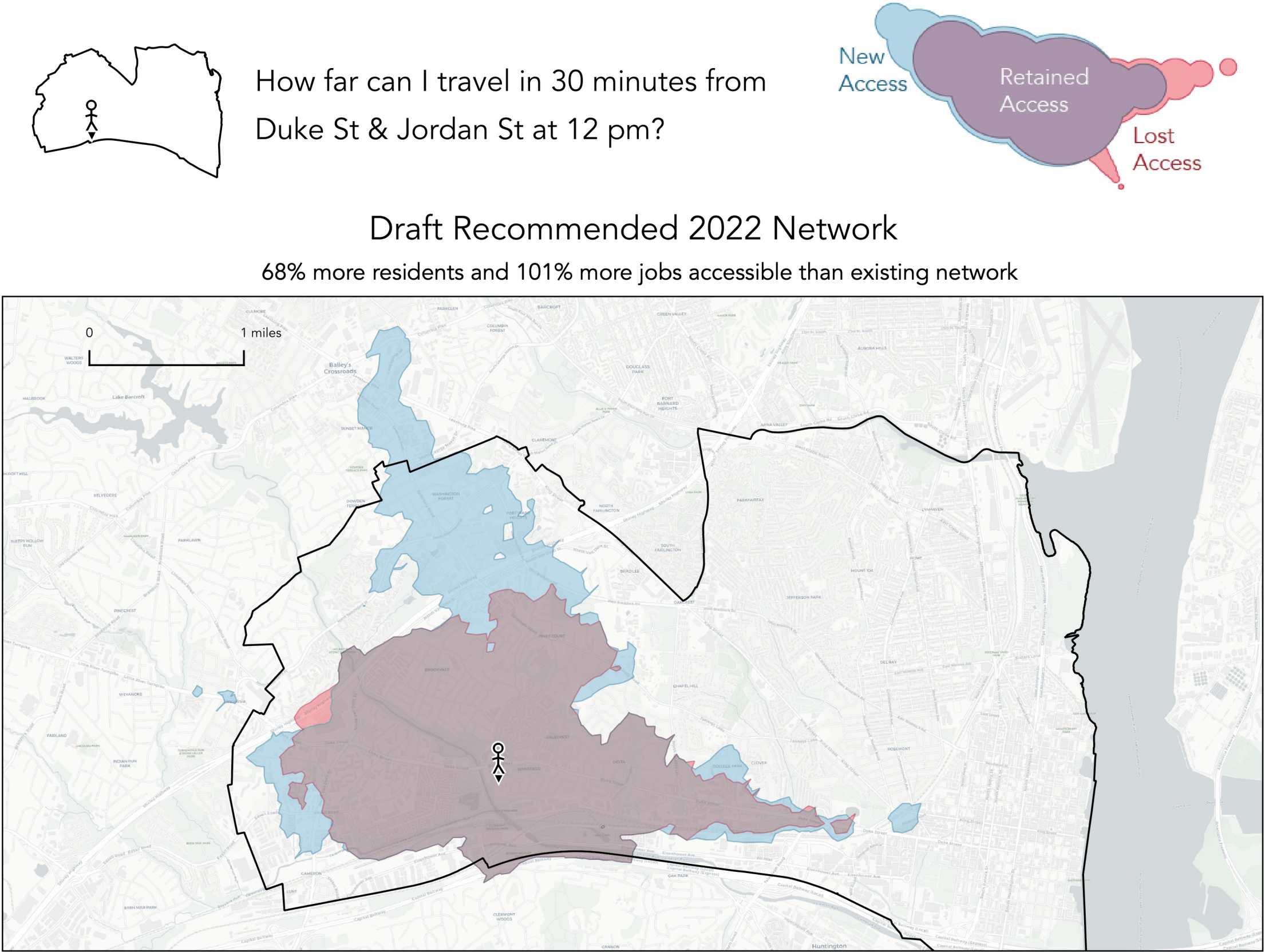How far can I travel in 30 minutes from Duke St & Jordan St at 12 pm?

New Access Retained Access Lost Access

Draft Recommended 2022 Network

68% more residents and 101% more jobs accessible than existing network

Figure 64: Isochrone showing the change in access from Eisenhower East Metrorail Station in 2022 Network

How far can I travel in 30 minutes from Eisenhower East at 12 pm?

New Access

Retained Access

Lost Access

Draft Recommended 2022 Network

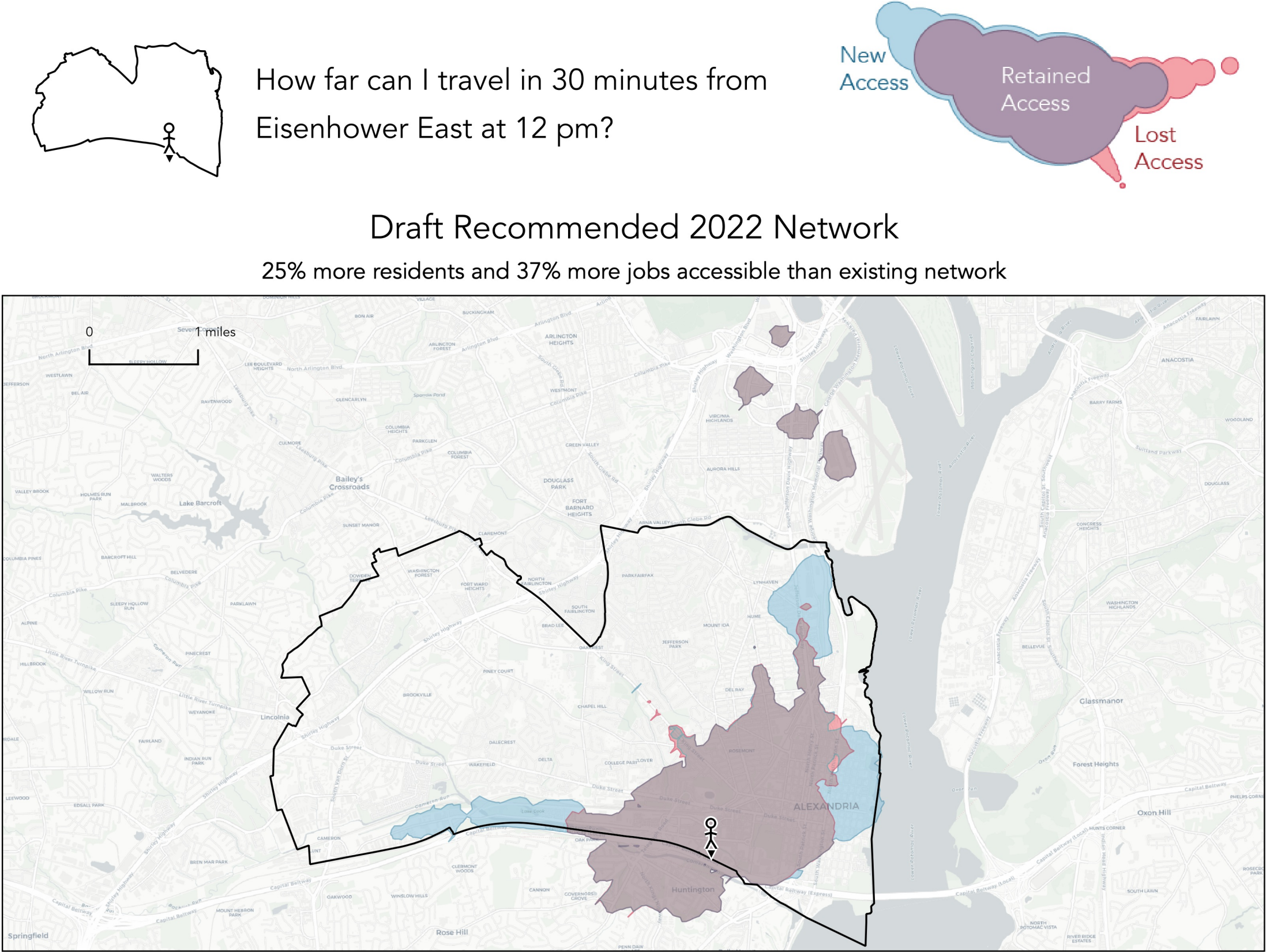25% more residents and 37% more jobs accessible than existing network

Figure 65: Isochrone showing the change in access from Inova Alexandria Hospital (Seminary Road and Howard Street) in 2022 Network

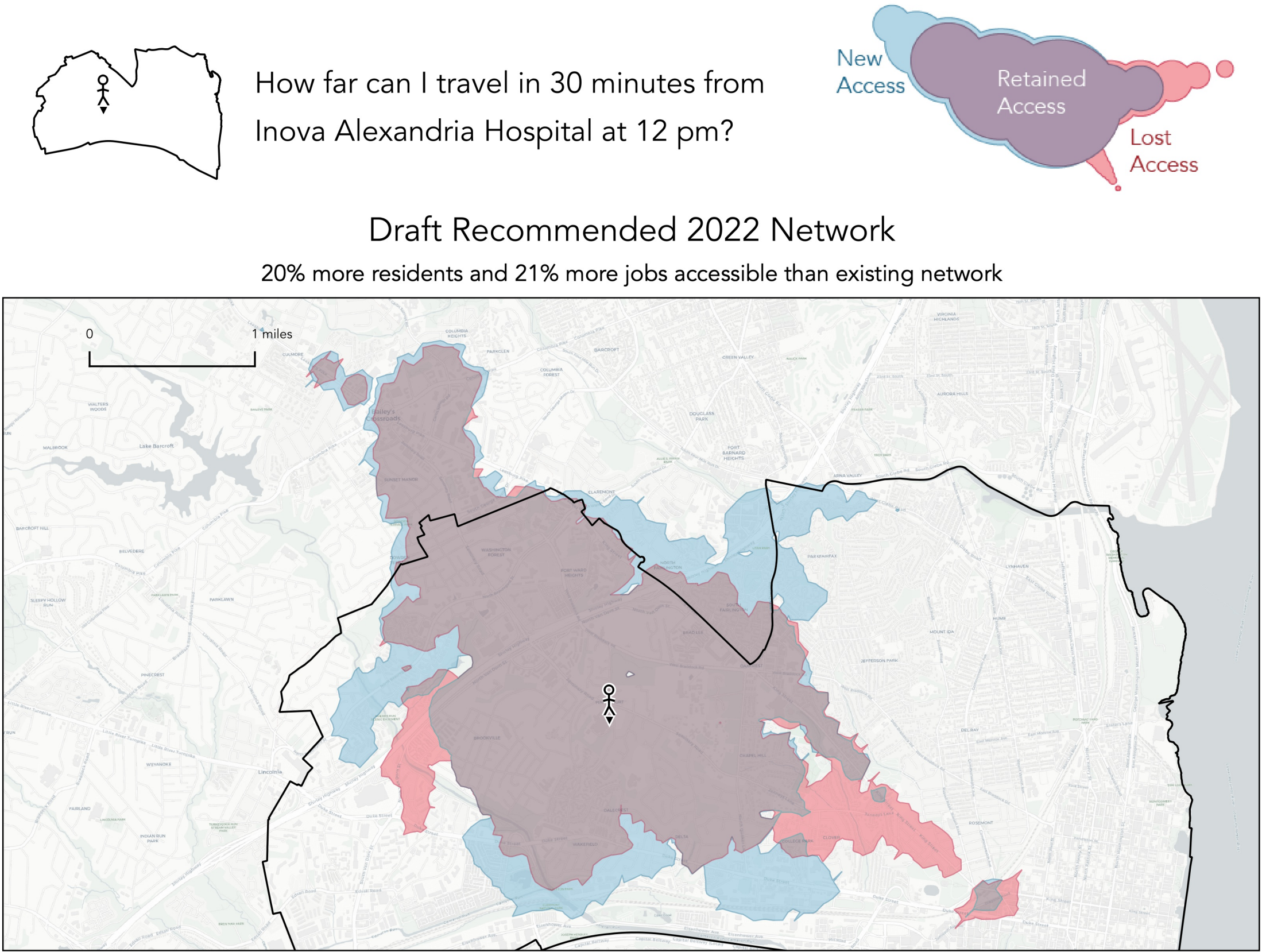How far can I travel in 30 minutes from Inova Alexandria Hospital at 12 pm?

New Access

Retained Access

Lost Access

Draft Recommended 2022 Network

20% more residents and 21% more jobs accessible than existing network

Figure 66: Isochrone showing the change in access from Parkfairfax (Gunston Road and Valley Drive) in 2022 Network

How far can I travel in 30 minutes from Gunston Rd & Valley Dr at 12 pm?

New Access
Retained Access
Lost Access

Draft Recommended 2022 Network

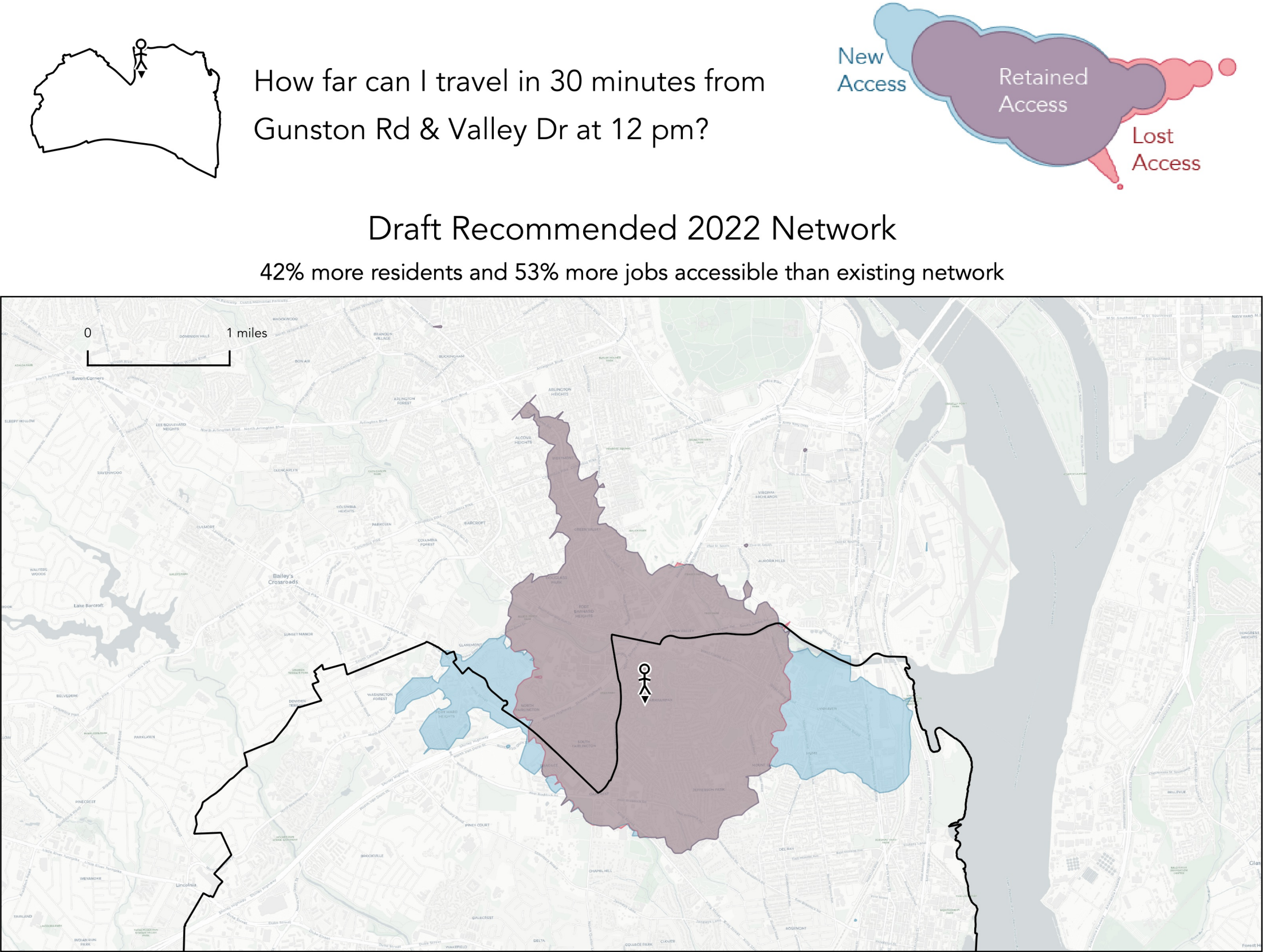42% more residents and 53% more jobs accessible than existing network

0   1 miles

Figure 67: Isochrone showing the change in access from King Street and Quaker Lane (near Bradlee Shopping Center) in 2022 Network

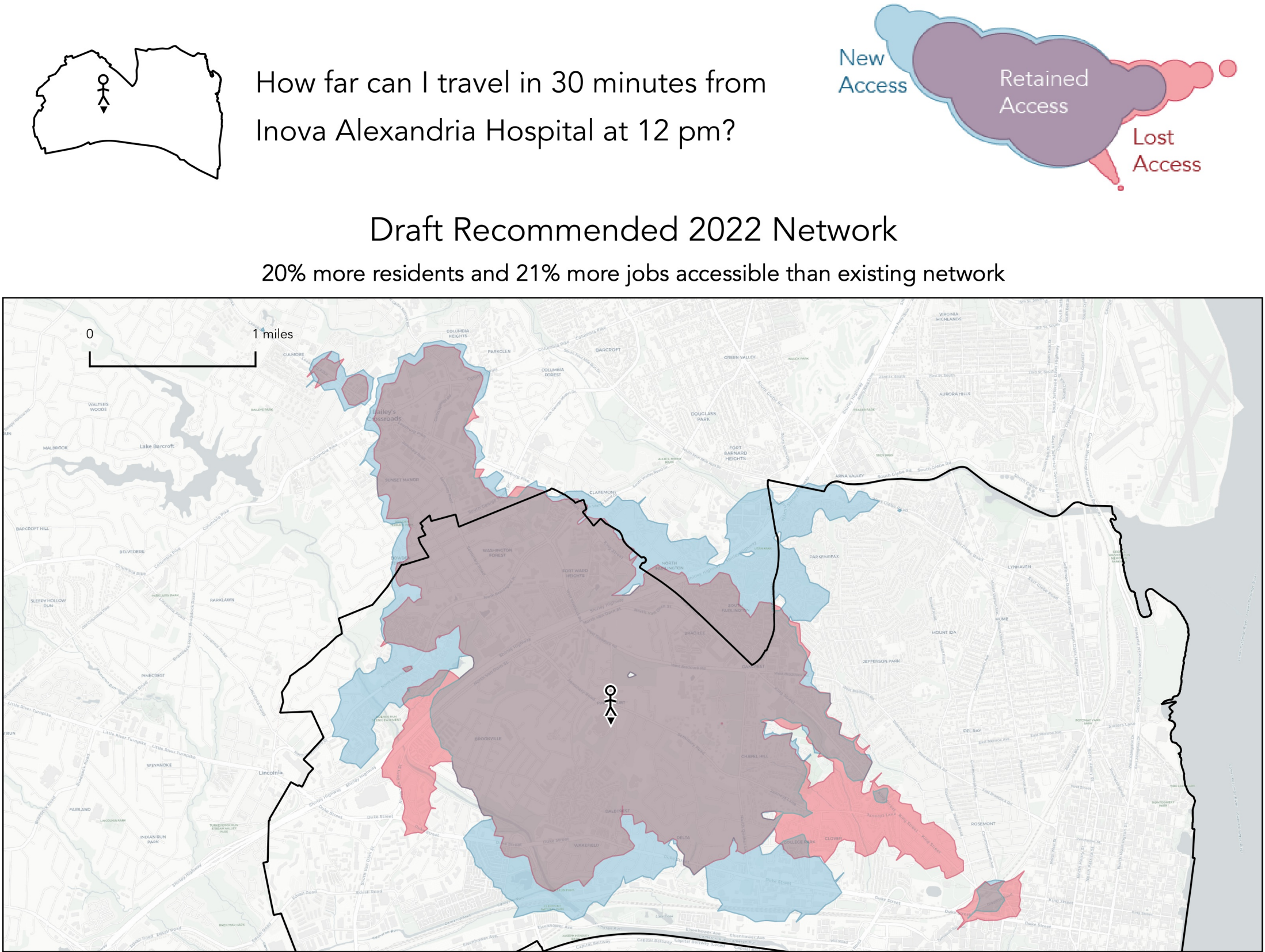How far can I travel in 30 minutes from Inova Alexandria Hospital at 12 pm?

New Access

Retained Access

Lost Access

Draft Recommended 2022 Network

20% more residents and 21% more jobs accessible than existing network

0   1 miles

Figure 68: Isochrone showing the change in access from Landmark Mall in 2022 Network

How far can I travel in 30 minutes from Landmark Mall at 12 pm?

New Access

Retained Access

Lost Access

Draft Recommended 2022 Network

24% more residents and 40% more jobs accessible than existing network
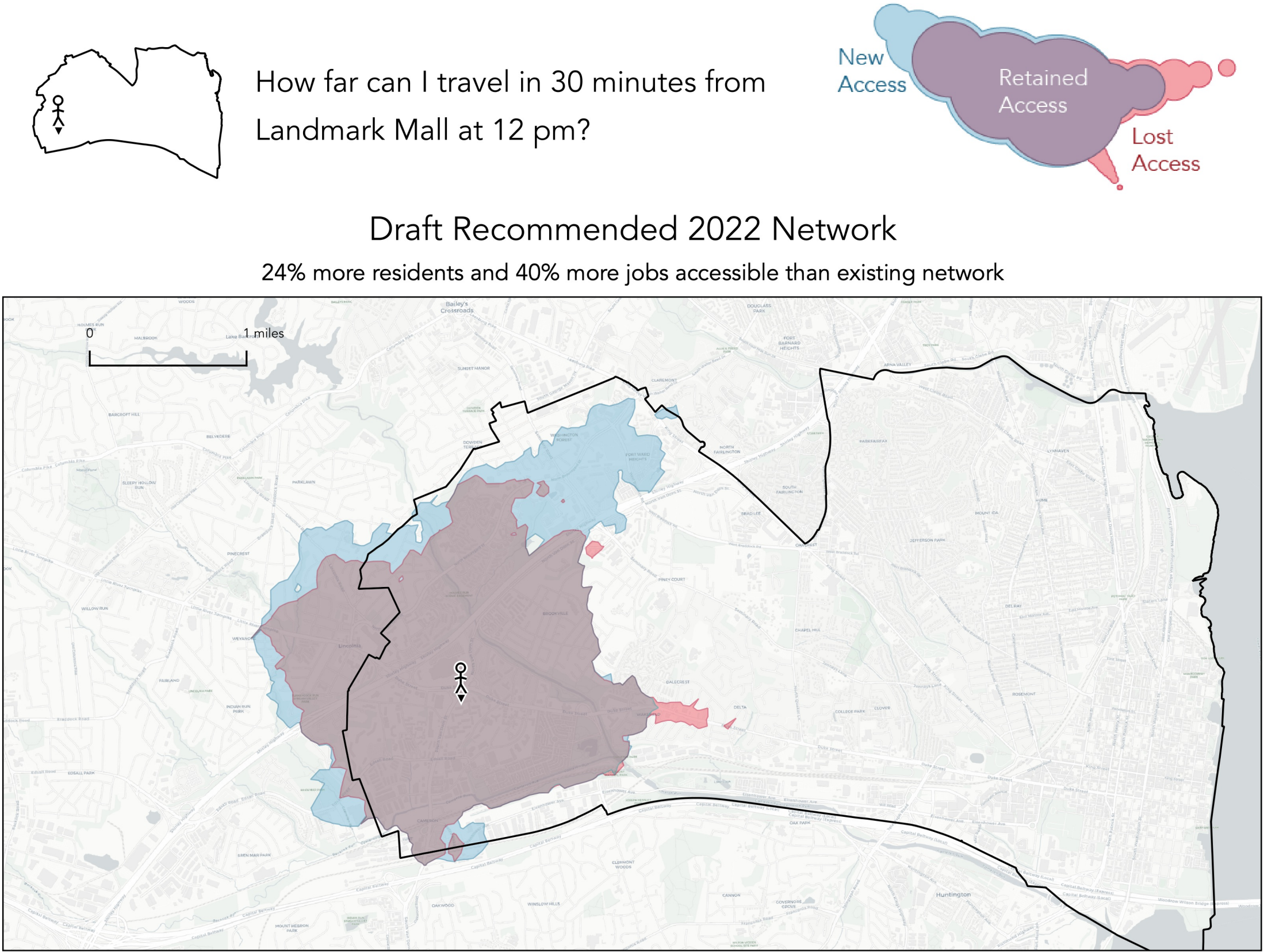
Figure 69: Isochrone showing the change in access from Mark Center in 2022 Network

How far can I travel in 30 minutes from Mark Center at 12 pm?

New Access

Retained Access

Lost Access

Draft Recommended 2022 Network
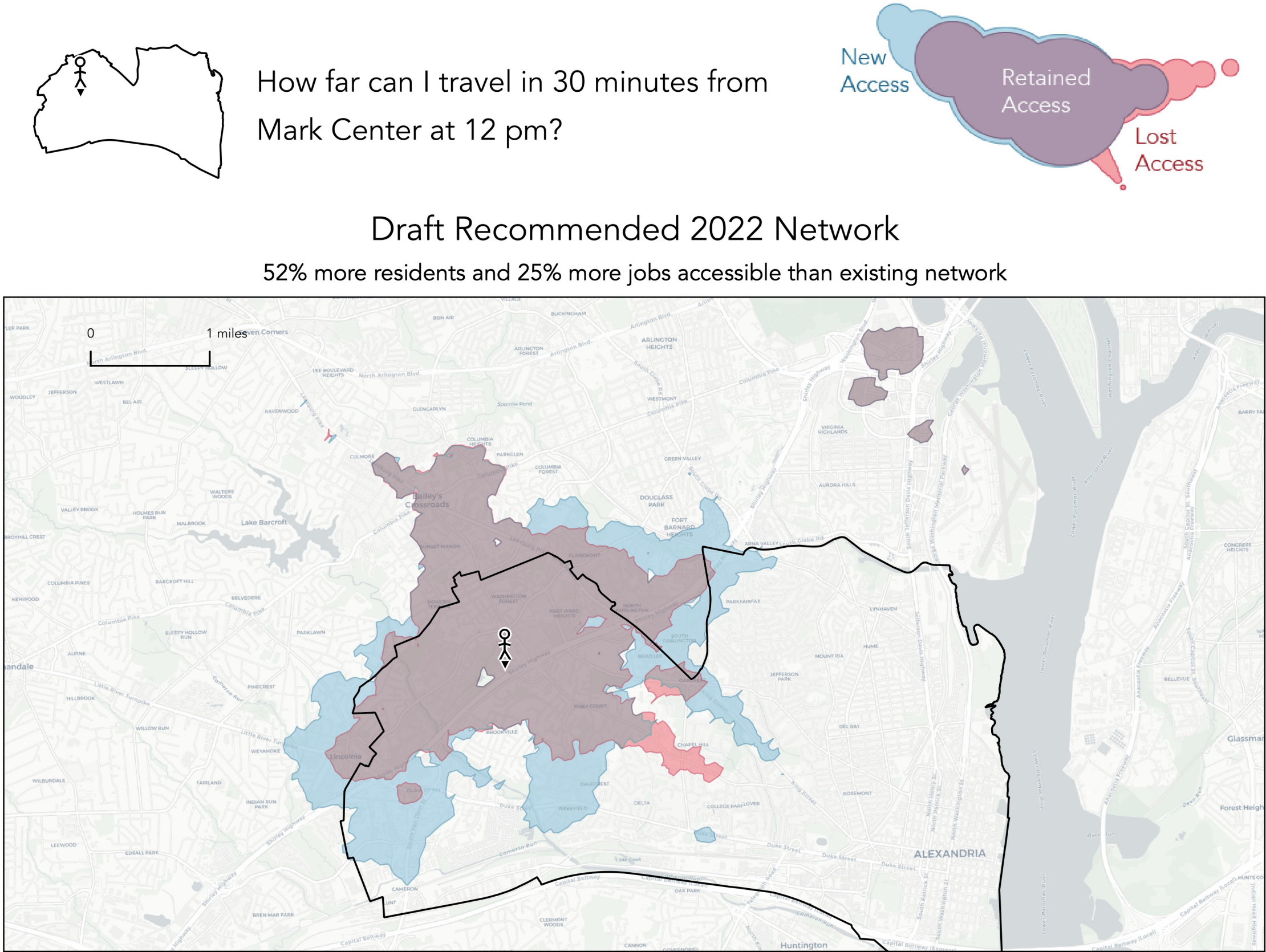
52% more residents and 25% more jobs accessible than existing network

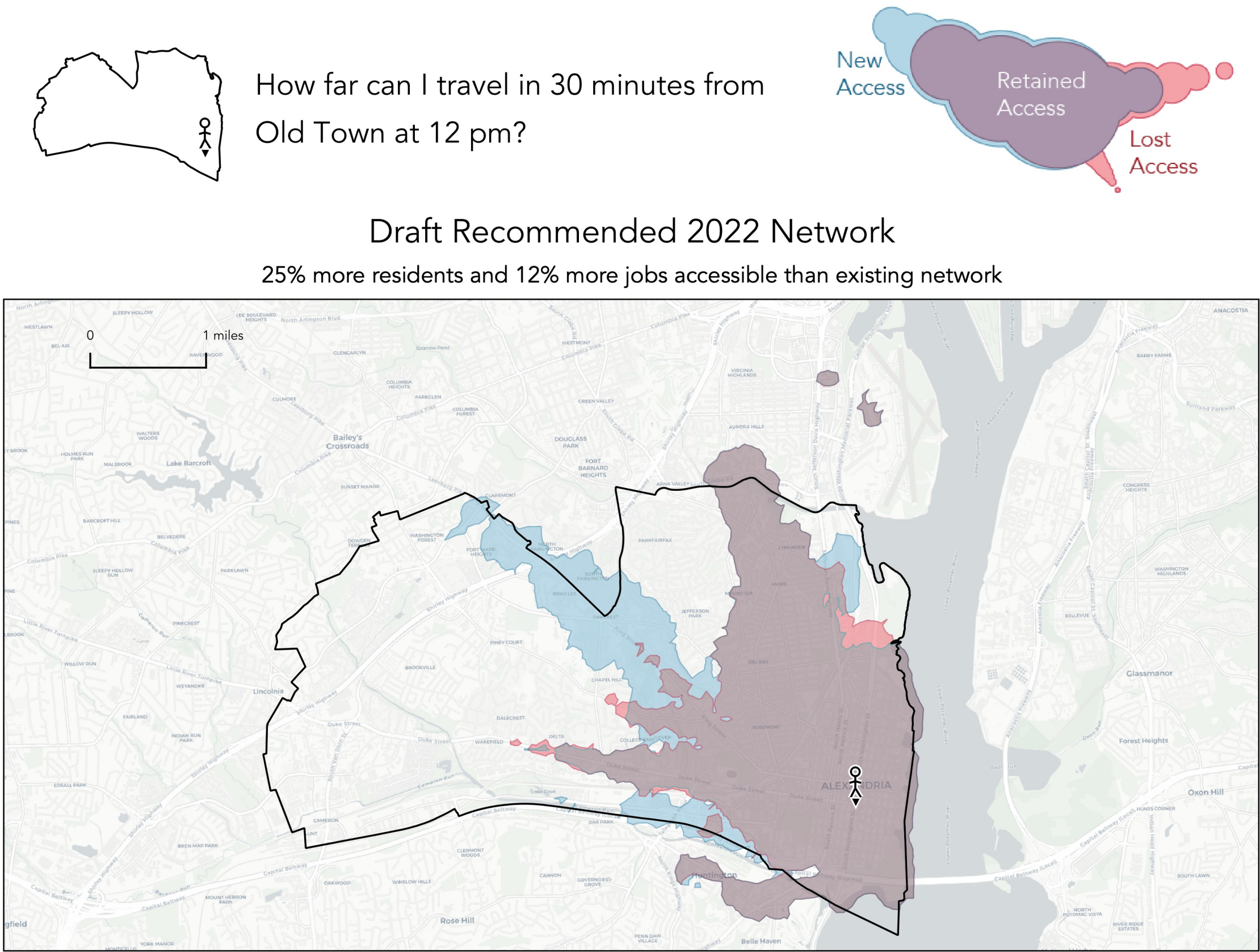**Figure 70: Isochrone showing the change in access from Old Town (King and Washington Streets) in 2022 Network**

How far can I travel in 30 minutes from Old Town at 12 pm?

New Access

Retained Access

Lost Access

Draft Recommended 2022 Network
25% more residents and 12% more jobs accessible than existing network

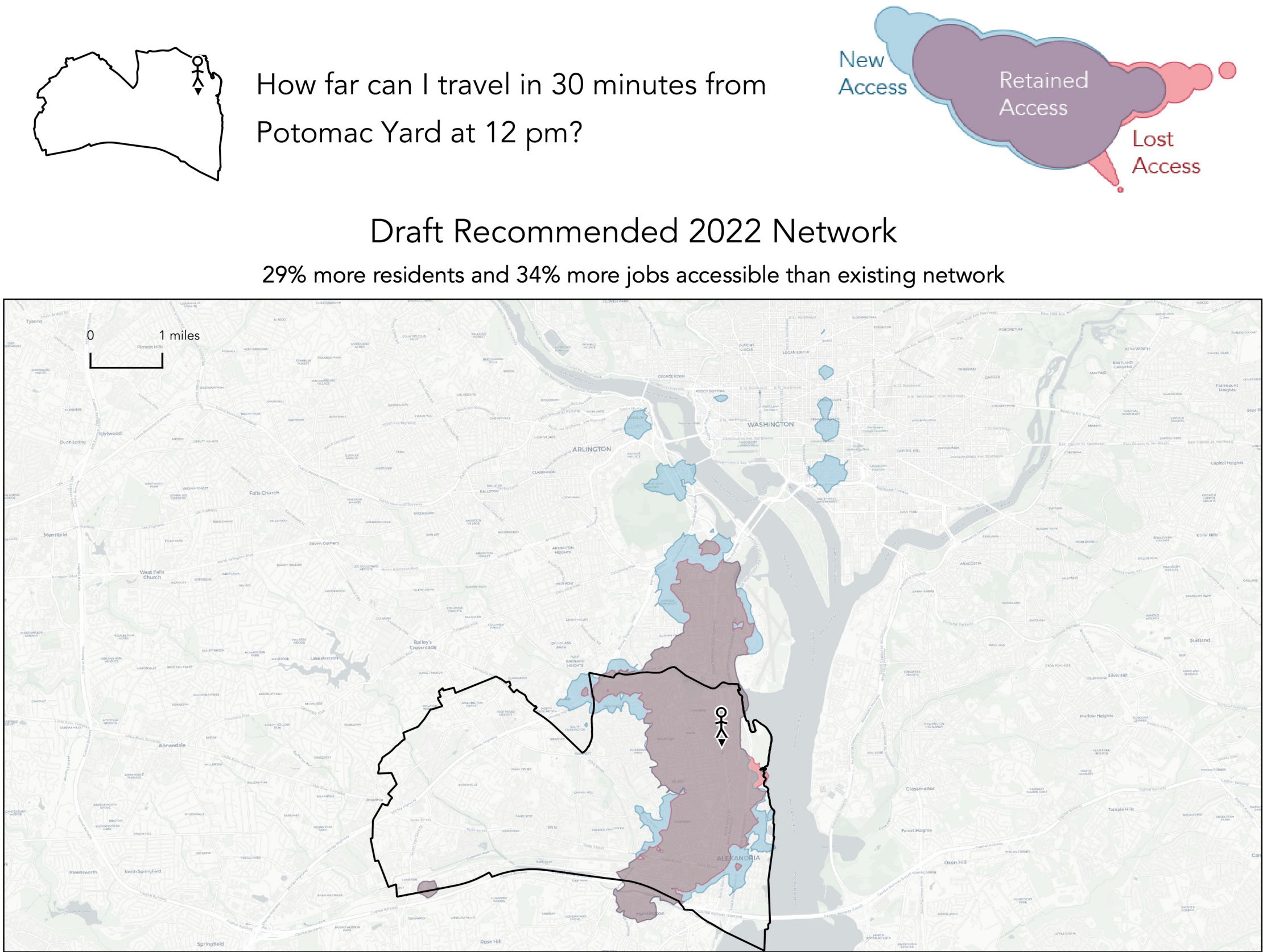**Figure 71: Isochrone showing the change in access from the Potomac Yard Metrorail Station in 2022 Network**

How far can I travel in 30 minutes from Potomac Yard at 12 pm?

New Access
Retained Access
Lost Access

Draft Recommended 2022 Network
29% more residents and 34% more jobs accessible than existing network

0   1 miles

Figure 72: Isochrone showing the change in access from Reading Avenue and Rayburn Avenue in 2022 Network

How far can I travel in 30 minutes from Reading Ave & Rayburn Ave at 12 pm?

New Access

Retained Access

Lost Access

Draft Recommended 2022 Network

48% more residents and 58% more jobs accessible than existing network
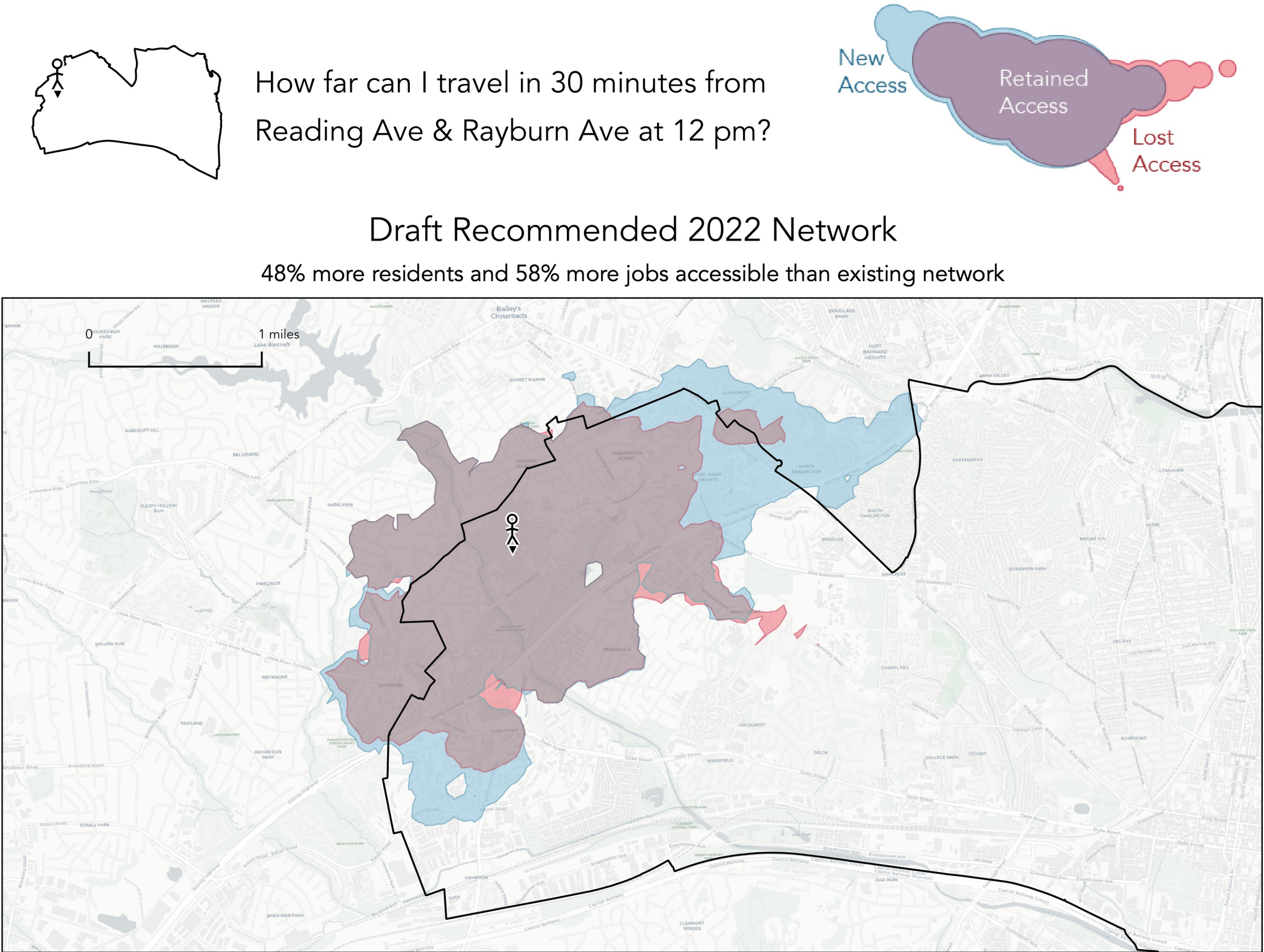
Figure 73: Isochrone showing the change in access from Southern Towers in 2022 Network

How far can I travel in 30 minutes from Southern Towers at 12 pm?

New Access
Retained Access
Lost Access

Draft Recommended 2022 Network

54% more residents and 31% more jobs accessible than existing network
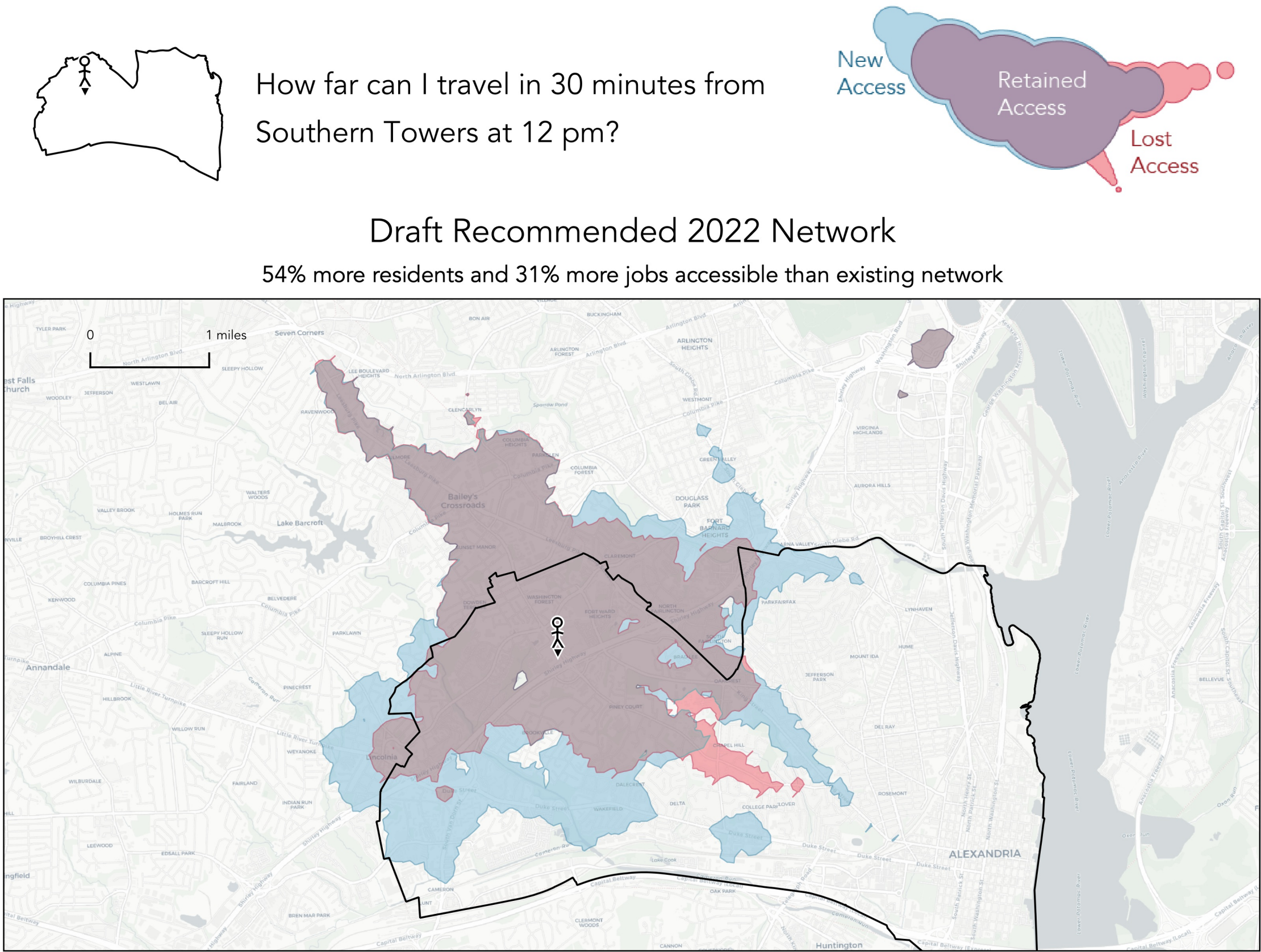
Figure 74: Isochrone showing the change in access from the Van Dorn Metrorail Station in 2022 Network

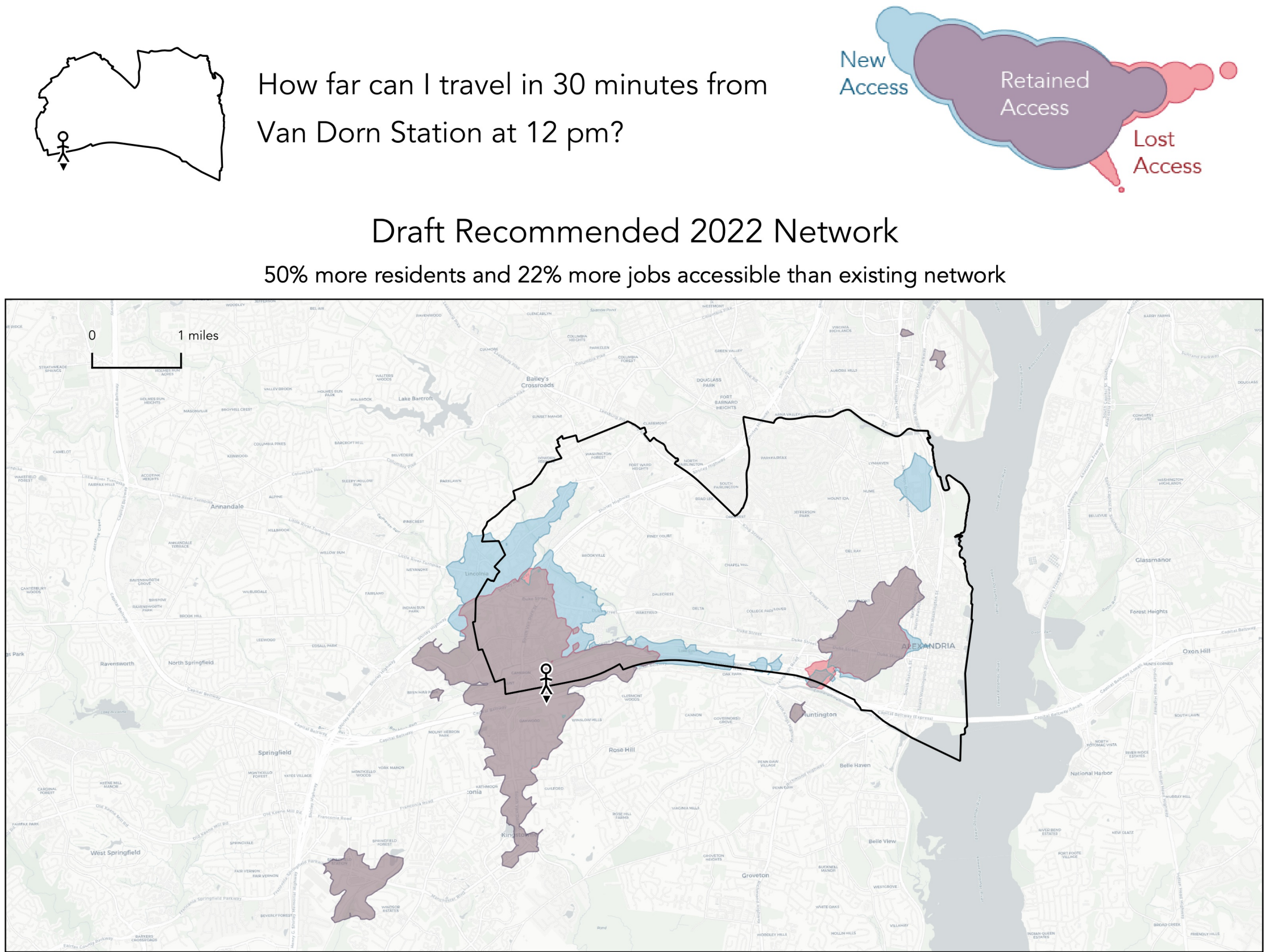How far can I travel in 30 minutes from Van Dorn Station at 12 pm?

New Access
Retained Access
Lost Access

Draft Recommended 2022 Network

50% more residents and 22% more jobs accessible than existing network

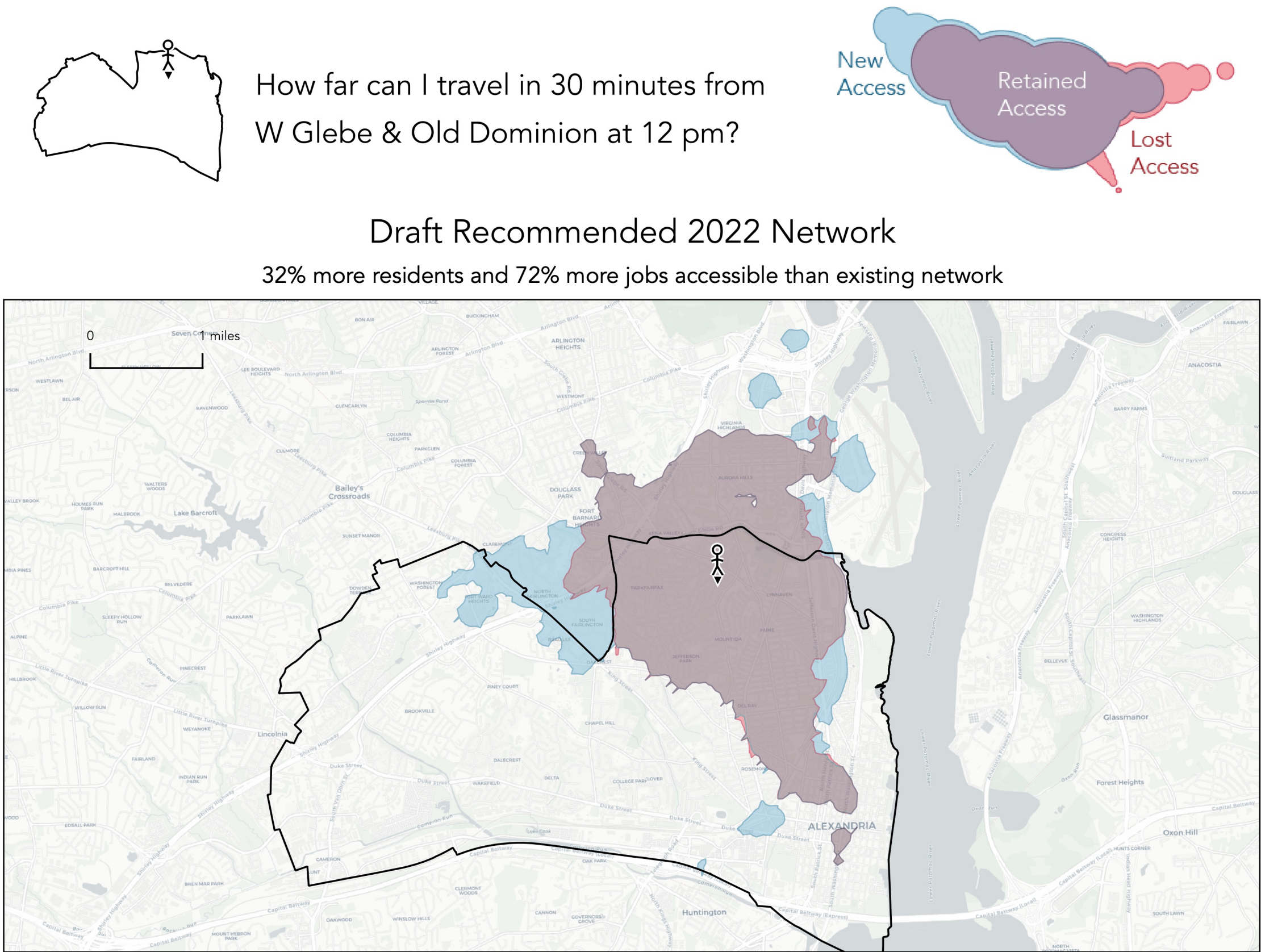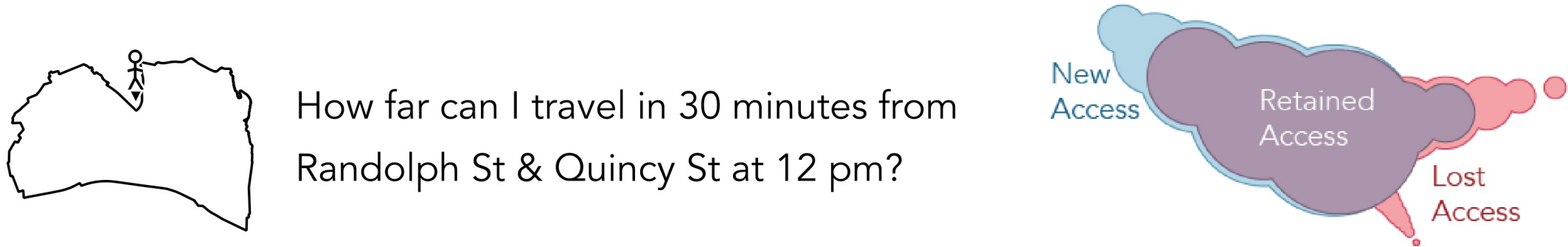**Figure 75: Isochrone showing the change in access from Arlandria (West Glebe and Old Dominion) in 2022 Network**

How far can I travel in 30 minutes from W Glebe & Old Dominion at 12 pm?

New Access

Retained Access

Lost Access

Draft Recommended 2022 Network

32% more residents and 72% more jobs accessible than existing network

Figure 76: Isochrone showing the change in access from Shirlington (Randolph Street and Quincy Street) in 2022 Network

How far can I travel in 30 minutes from Randolph St & Quincy St at 12 pm?

New Access

Retained Access

Lost Access

Draft Recommended 2022 Network

31% more residents and 23% more jobs accessible than existing network